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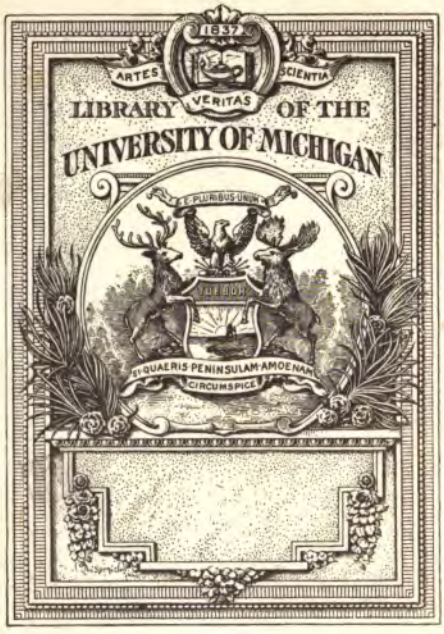


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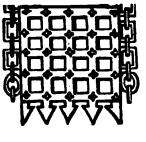

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# REPORTS.

EDITED BY

OCTAVIUS STURGES, M.D.Cantab., F.R.C.P.,
AND
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# In Memoriam.

## DR. CHARLES BLAND RADCLIFFE.

By GEORGE COWELL.

There passed away to his rest on the evening of Tuesday, June 18th, 1889, in his sixty-eighth year, suddenly, and from the rupture of a varicose vein, Dr. Charles Bland Radcliffe, so well known in connection with the Westminster Hospital. He was elected an Assistant Physician of that institution on May 21st, 1853, as the coadjutor of Dr. Fincham, on the retirement of Dr. Woodfall, the senior of the two physicians who at that time constituted the Assistant Medical Staff. And only four years later, on April 25th, 1857, he succeeded, on the retirement of Dr. Hamilton Roe, to the post of Physician. He discharged the duties of this office until May 27th, 1873, when he was elected Consulting Physician, and was succeeded by Dr. Anstie, in whose favour he had retired, and who had held the post of Assistant Physician for a period of thirteen years.

With Dr. Radcliffe, as with many others, the Medical School was the stepping-stone to the hospital appointment. In the spring of 1850 he was appointed Lecturer on Botany, and he lectured on this subject for four years. In the beginning of 1854 he was elected to the kindred chair of Materia Medica, a post which he held for five or six years. He was elected Dean of the School in 1859, and it was at the sug-



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gestion of Dr. Radcliffe, when he became Dean, that the fee of £100, which heretofore had to be paid for the post of House Surgeon for twelve months, was abolished, and the appointment made a prize for the best student. Although vigorously opposed, the change was in accordance with the growing opinion of the time, but it was long felt that the payment, whilst it had not prevented vigorous competition, had secured a full appreciation of the great value and éclat of the appointment, and had stimulated the holder to avail himself to the utmost of its advantages.

In 1857 Dr. Radcliffe delivered the Introductory Address on October 1st. He was never associated with the Chair of Medicine, but amongst his share of the lectures on Clinical Medicine, he delivered many on his favourite subjects—the various forms of convulsive and nervous disease. He continued after he had retired from the active staff to take an interest in the success of the Medical School, and was present at the Introductory Address last year.

Dr. Radcliffe was born on June 2nd, 1822, at Brigg, or, as it was formerly called, Glanford Bridge, midway between Gainsborough and Great Grimsby, in the north of Lincolnshire. He was the eldest son of the Rev. Charles Radcliffe, a Wesleyan minister, a man of some cultivation, "a scholar, an antiquarian, and a mathematician." He was carefully educated by his father until he was old enough to go to school, and his father having removed into Yorkshire, he was sent to the grammar school at Batley, near Leeds. Whether his family was in any degree connected with the Dr. Radcliffe of the gold-headed cane, or whether he in any way inherited a taste for medical practice, is not known; he, however, manifested a desire to enter the medical profession, and was sent as a pupil to Mr. Hall, a well-known general practitioner at Wortley. He subsequently became a student at the Medical School at Leeds near by. Here he worked assiduously, and to such good purpose that he took a good position in the School, and is said to have been the first provincial student who received a gold medal from the University of London. Whilst he was at Leeds he was the Dresser of the late Mr. Teale. He subsequently studied both in London and in Paris, and took his M.B. degree in

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1845, became a Licentiate of the Royal College of Physicians in 1848, took his M.D. degree in 1851, and became a Fellow of the Royal College of Physicians in 1858, a short time after his appointment as Physician at Westminster. He was in succession Gulstonian Lecturer in 1860, Croonian Lecturer in 1873, and Censor in 1875-6.

It was at the end of 1848 that Radcliffe commenced to be a candidate for practice in London. He was married in 1851, and his widow survives, but he had no children. In addition to his Westminster appointment he in 1863 succeeded Dr. Brown-Séquard as Physician to the National Hospital for the Paralysed and Epileptic in Queen's Square, established about four years before, and took that physician's house in Cavendish Square. Radcliffe's success in practice may almost be said to have commenced at this period, and his practice was to a large extent amongst the upper and more wealthy classes of the community. It was also almost exclusively in nervous diseases that his opinion was sought. The mantle of Dr. Brown-Séquard had fallen upon him, and he retained his appointment at the Queen's Square Hospital long after he had retired from active work at Westminster. In fact, he was devoted to the special subject of his choice to the last, and it was curiously on the morning of the day of his death that he had persuaded himself that he could no longer perform the duties of the office to his own satisfaction, and had sent in his resignation.

Dr. Radcliffe was in appearance particularly striking and attractive. He looked the Physician in a way quite remarkable, but perhaps of a type of a former age rather than of the present. He was quiet and genial in manner, and of a cast of mind peculiar to himself. He was a man of taste and of wide information, and the bent of his mind was scientific, with a tendency towards novel theories and abstract problems of metaphysics. He was a most regular attendant at the Friday evening lectures at the Royal Institution, and enjoyed and absorbed the information there conveyed to so remarkable a degree that he appeared charged with it, and for days gave off portions of it like sparks to all his friends who came in contact with him. He found great pleasure in social intercourse, and was often seen in society, and as a man of

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great friendliness, of considerable conversational ability, and often of humour, he inspired many warm and lasting friendships.

Dr. Radcliffe was very prolific with his pen. For many years, 1845 to 1873, he was joint editor with his friend Dr. W. H. Rankin of 'Rankin's Abstract of the Medical Sciences,' and must have done a large amount of work in that capacity. The following is the list of books that he published:

'Proteus, or the Law of Nature,' 1850.

'The Philosophy of Vital Motion,' 1851.

'Epilepsy and other affections of the Nervous System, marked by tremor, convulsion, or spasm,' 1854.

'Epilepsy and other Convulsive Affections, their pathology and treatment;' second edition, 1858.

'Epilepsy and other Convulsive Affections of the Nervous System, their pathology and treatment;' third edition (incorporating the Gulstonian lectures for 1860), 1861.

'Lectures on Epilepsy, Pain, Paralysis and certain other disorders of the Nervous System,' 1864.

Articles on Chorea, Diseases of the Spinal Cord, Tetanus, Locomotor Ataxy, Spinal Irritation, &c., in 'Reynolds's System of Medicine,' 1868 and 1872.

'Dynamics of Nerve and Muscle,' 1871.

'Vital Motion, as a mode of Physical Motion,' 1876.

'The connection between Vital and Physical Motion, a Conversation' (privately printed) 1881.

This goodly list shows the activity and bent of Dr. Radcliffe's mind. Any attempt to make a complete review of all this work or to analyse the opinions and scientific theories these books contain would be out of place even if the writer felt competent to undertake the task. Neither is this the place to criticise or discuss the views that he held and enunciated in the doctrine of Vital Motion. This notice may, however, be fitly closed by quoting the estimate of Dr. Radcliffe's scientific work, which appeared soon after his decease, from so accurate and able an observer as Professor Burdon Sanderson. He says:—During a period of nearly thirty years, begun with the publication of 'Proteus, or the Law of Nature,' Dr. Radcliffe devoted himself with extra-

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ordinary aptitude and perseverance to the study of those fundamental questions relating to what Bichat called the functions of animal life, which bring it into relation with physics on the one hand and with psychology on the other. Perhaps the best specimen of his work is to be found in the latest of his purely scientific productions, an essay on 'The connection between Vital and Physical Motion,' which was privately printed by him some years ago for the criticism of his friends, in the hope that the truths set forth might thereby receive more complete illustration.

The fundamental doctrine of Dr. Radcliffe was that all the functions or activities of the nervous and muscular systems were essentially electrical. In the fact, he writes, that muscular action is directly proportionate to the development of heat and the exhalation of carbolic acid, "there is nothing to justify the notion that heat is transformed into muscular force," or "that electricity may not be developed along with heat in the combustion of force fuel within the system, and that electricity may not do the work that has been ascribed to muscular force. . . In a word you may with little or no trouble satisfy yourself that muscular force and nervous influence must share the same fate, and that the only intelligible agent that is left in possession of the field is electricity." He accordingly looked forward to the time when "the words irritability, irritation, stimulation, and the like will be replaced by other words which show that the idea of irritability is resolved into that of natural electricity."

The way in which he explained to himself, with the aid of "electricity," the relations between centres afferent and efferent nerves and motor and sensory end organs may be also best understood from his own words: "The electricity which is generated in the nerve-centres, mainly by the action of the red blood . . . counteracts or inhibits vital action as long as it is properly kept up." In some centres the electrical "charge" runs down more quickly than in others. Thus the rhythmical centres of the heart "run down" more quickly than those of respiration. Comparing the rhythmical nerve-centres with the non-rhythmical, it would seem that the inhibitory action which prevents contraction is more prolonged in the case of the latter centres than in

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the case of the former. There is, however, no impassable line of separation between the two, for, as is seen in the case of paralysis agitans, or chorea, or disseminated spinal sclerosis, the action of the brain or spinal cord, which is non-rhythmical under ordinary circumstances, may become rhythmical under extraordinary circumstances. In these cases it would seem that the electrical charge of the brain or spinal cord, diminished by degeneration or by an insufficient supply of red blood, runs down more quickly than it ought to do, and that for this reason nerve-centres which are non-rhythmical naturally become rhythmical; . . . and, if the rhythmical nerve-centres within the heart, or the respiratory nerve-centre or centres are more highly developed or more vivified by red blood, it may be supposed that the electrical charge of these centres will run down less quickly, and that the effects of this change would be to retard the beatings of the heart and the heavings of the chest. In a word, it is not difficult to bring the non-rhythmical and the rhythmical nerve-centres into the same category, and at the same time to see that all nerve-centres have, so long as their electrical charge is kept up as it ought to be, the inhibitory action which is supposed to belong only to certain special inhibitory centres."

Those who are acquainted with the progress of physiology during the last ten years may, if they are so disposed, find in the paragraphs we have quoted suggestions or forecasts of truths which other men have laboriously arrived at by inference from experimental fact. Dr. Radcliffe was essentially a vitalist, but with this difference, that in his doctrine electricity took the place of the vital principle. In compliance with the spirit of the time he substituted for "life" something else, of which the relation to the facts to be explained was equally undetermined. He was an acute observer in science as in medicine, and a persevering experimenter, but his experiments were rather made for the purpose of establishing principles which he had already accepted as unquestionable truths than for the discovery of new facts. The lucidity of his style and the shrewdness of his reasoning made all that he wrote worth reading and his talk interesting and instructive; and this was the case, even though the

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reader or listener might doubt whether the views he advanced would bear scientific criticism.

Some thirty years ago Dr. Radcliffe was the only person in this country who was conversant with the then recent discoveries of Du Bois-Reymond and his immediate predecessors relating to the electrical properties of living muscle and nerves. For the purpose of studying these phenomena for himself he had mastered the technical difficulties of observation, which were then very great; and it was to his house in Henrietta Street that the young physiologists of that time had recourse to learn elementary facts in nerve and muscle physiology which are now familiar to all medical students. The writer well remembers how accessible he always was for this purpose, how perseveringly he struggled with experimental difficulties, and what intense pleasure it gave him when at the end of a long evening he succeeded in demonstrating some important fact.

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# ON ENTERIC FEVER IN CHILDHOOD.

By Dr. DONKIN.

The following clinical remarks are concerned mainly with what seem to be the leading characteristics of enteric fever in early life. The disease is predominantly incident on youth; the study of it, therefore, in its youngest subjects is one of special interest both clinically and pathologically.

The salient points which strike the experienced observer of enteric fever at all ages are its comparative benignity, small fatality, and often apparently short duration in childhood; and there are not a few cases which depart more or less from what is generally recognised as the type-disease. Added to this, pathological records of fatal cases in early years point with a general consensus to comparatively less frequent important ulceration of intestine, and to its occasional absence even in cases clinically well marked.

It is the clinical aspect mainly which is special to the practical study of this disease in childhood, post-mortem observations being, as we have seen, but few. It is necessary, therefore, to have as clear a conception as possible of what we denominate enteric fever in this context, in order to be at least logical and intelligible in discussing it, even though our present knowledge of the etiology and pathology of the disease may not be sufficient to ensure to us the possession of the whole truth on the matter.

The term "enteric fever" will be greater or less in its

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content, more or less definite, according to the theory held as to the etiology of the disease. It is necessary to refer at the present day to two views only, which still have their supporters though in very different proportions; on the one hand, to that most widely held by clinicians and pathologists, that the fever is always due to a specific organic poison reproducing its like, and, on the other, to that which under various forms regards the affection as non-specific. It is clear that the upholders of the specific theory must logically have a more definite and therefore less inclusive conception of what they denominate enteric fever than those whom the hypothesis of a wider range of causation allows a more comprehensive field of symptoms. Doubtless there is no practical difficulty or difference of opinion as to diagnosis in the large majority of cases, especially as occurring in adults. All good observers will agree, as a rule, in what they recognise clinically as enteric fever, whatever their views may be as to its etiology and natural history generally. But there must be, and is, a tendency on the part of the specific theorists to exclude certain cases from the enteric domain which would be readily admitted by their opponents, and we shall find from time to time examples of this in a certain difficulty when considering cases of continued or continued-remittent fever in early childhood. As to the other theory of the origin of the fever, the most important formulation of it, at least in Britain, is that of the late Dr. Murchison, who taught definitely, though not in so many words, that the disease is not "specific" in the true sense. He called it, as is well known, "pythogenic," by which he meant that it was the result of decomposition; that the organic matter, out of which the poison arose, need not contain any emanation from an enteric case, and that therefore the disease might arise *de novo*. It will at once be seen that those who hold this opinion in any shape may fairly have a somewhat indefinite conception of enteric fever, and may teach, with certain physicians of the present day, that it is practically a generic affection including several more or less recognisable varieties, or, still regarding the disease as one, may name almost any case of continued fever "enteric," though lacking, perhaps, almost all of the characteristics which first gave

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enteric fever a place in nosology, and set pathologists on the track of a specific cause.

I do not propose to enter into any discussion here on this etiological *quæstio vexata*, as difficult as it is important, but must be content with stating categorically my adherence, at present, to the specific theory, and my consequent rejection of the so-called "pythogenic" origin of enteric fever with all its consequences. I believe there is a clinical affection sufficiently well marked as a rule, including the cases of early childhood, to justify the view that it is one and indivisible, that it is probably always accompanied at some stage by a special intestinal lesion (with the possible exception of some cases which may die before this lesion is developed); that there is adequate scientific evidence that the disease directly produces its like, and always springs therefrom, that it may be communicated in some way from the sick to the healthy without any intervention of a decomposing process; and that it is probable that it may be caught by direct absorption of emanations from the sick (whether always fæcal or otherwise it is impossible to say), to the exclusion of any necessary introduction of fæcal matter directly into the alimentary canal of the previously healthy subject of the infection.

I may add that on the subject of the communicability of enteric fever I am completely in accord with the views and arguments of Dr. Collie, of the Homerton Fever Hospital, and that I have had under my own observation many cases which after careful and critical study seemed conclusively to show that what are still, I fancy, the most generally received views on this point are, to say the least, not proven, if not quite untenable.

It now remains for me, before proceeding with the special matter of this paper, to state, as far as possible to medical generalisation, what it is, in my opinion, necessary to hold as essentials for the practical diagnosis of enteric fever, making at the same time a consequent admission of ignorance, and difficulty in certain cases. Assuming that my readers are well acquainted with the usual symptoms and description of so-called "typical" attacks of enteric fever as given in systematic text-books, I may proceed, as it were, by way of

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exclusion, and mention the following more or less exceptional conditions which may obtain in cases which are rightly diagnosed as enteric fever.

It is not necessary that the fever should last for three weeks or more; the "temperature curve" of Wunderlich may vary so much as to become unrecognisable, especially if the temperatures be taken, as they should be, every three or four hours; the rose-spots may be nearly or entirely absent throughout the disease; there may be no diarrhœa nor even loose motions, but the motions may be absent for many days, or constipated, or even apparently normal; there is often no delirium, even at night, nor any marked disturbance of the nervous system; the appetite may be fair throughout; there may be no pain; there may be no evidence of splenic enlargement or of any abdominal trouble; and there may be no obvious affection of the respiratory or circulatory organs. But to cases of enteric fever properly so-called the above conditions, which I have enumerated as more or less exceptional, never apply as a whole. Were this to be the case we should have to give the name of "enteric" to almost any fever which might deserve to be called "continued" without any further characteristic, so that continued fever in the vaguest sense would come to be synonymous with "enteric fever." To make the diagnosis of enteric fever during life one, or rather more than one, of the conditions included in the above list must be present. If, for example, the fever should run a course of but fourteen days or less, the characteristic eruption, or diarrhœa, or abdominal tumidity or tenderness, or splenic enlargement, &c., one or more of these marks should be present before we make a definite diagnosis. And, again, a more prolonged fever, if lacking the ordinary enteric characters and unaccompanied by other marks or any local trouble, is not justifiably dubbed enteric. As to the relative value of the various symptoms in detail in the enteric of childhood, I shall speak further in the sequel.

There remains, it will be seen, a certain number of cases which, according to this showing, may present considerable difficulty in diagnosis during life, although the few which die may be cleared up by post-mortem examination. I allude to cases of fever which may run a short and not

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severe course with few or no symptoms which can be called characteristic. Now a certain number of such cases, according to most authorities, die and give evidence of the characteristic intestinal lesion of enteric fever. These cases form a small proportion of those which are known as "ambulatory" enteric fever—cases where the patients may never feel ill enough to take to their beds, but where ulceration, perhaps deep and fatal, may occur. For it is mainly by way of perforation that such patients come to their death, the general stress of the fever having been but slight. In my own experience cases of this kind have been but few, and none have been fatal. Their existence is not to be doubted. The diagnosis, however, during life of most of these exceptional cases (and most of them, as we have seen, recover) must, I think, be left undecided, except, perhaps, in instances where enteric fever is very prevalent or other well-marked cases exist in close contact with them. There must therefore remain, in my opinion, a certain small number of fever cases, mainly in childhood, which there is no justification in the present state of our knowledge to denominate enteric. I would prefer to leave them unclassed. It must be remembered that an immense majority of cases which show the characteristic intestinal lesion *post mortem* have evinced some of the characteristic symptoms during life, and it in no way weakens this contention to admit of some few cases which may die before such lesions have been developed. It follows from what I submit that I am not in accord with those authorities who, speaking of what was formerly called infantile remittent fever, unhesitatingly refer all such cases, which they appear to deem of common occurrence, to the category of enteric fever. As a matter of fact, after long experience and study of the disorders of childhood at the East London Hospital for Children, I do not recognise any very considerable class of cases outside alimentary, tubercular, malarial, perhaps some rickety or syphilitic troubles, and some cases of fever symptomatic of local inflammation, which could with any plausibility be called infantile remittent fever, with the exception of those instances of fever possessing some other marks of enteric than that of remittence.

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In looking over, for instance, all the cases which were under my care for a period of six years, at the Hospital for Children, I find only three which are entered as nondescript or doubtful enteric fever, *i. e.* cases of remittent fever of two or three weeks' continuance unmarked by any of the signs which I have above quoted as characteristic of enteric fever, and where other diseases were either not indicated or could be fairly excluded. I believe it would be equally as reasonable to refer such nondescript cases to some of the other classes referred to above as to dogmatically class them as enteric. I am not, of course, in any sense denying that the infantile remittent fever of former authors, as has been well shown by many distinguished physicians and pathologists both by clinical and anatomical research, was largely enteric; the fact is undeniable; but merely stating that there are not many cases of remittent fever in childhood which in default of a fatal result we are obliged to suspect as enteric for want of more marked symptoms of that or other diseases. The difficulty, in a word, in careful practice, is not so great as it appears to be on paper. There has doubtless been a tendency on the part of those who recognise the truth of decreasing susceptibility to enteric fever with increasing age to make too much of the probability of indefinite febrile attacks in childhood being specifically enteric; and to assume, I think without adequate grounds, for the purpose of rounding off a theory, that a large number of persons are protected from the disease by such indefinite attacks. The case may be as they allege; their position cannot be disproved, and there is no doubt that many cases of enteric fever in children are altogether overlooked, but I submit that, generally speaking, the assumption alluded to is greater than facts will warrant.

Recognising, then, the difficulty of making certain diagnoses in the above class of cases, and preferring to leave the difficulty as it is to smoothing it over with assumptions, we may consider now the chief characters of enteric fever in childhood, from the most marked cases down to those which, however slight and atypical they may be, have yet the minimum of symptoms which fairly gives them a claim to the denomination of enteric.

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The following remarks are largely based on an analysis of 62 cases of enteric fever taken consecutively out of my hospital note-books at Shadwell and Westminster during a space of ten years, without choice; the omissions consisting only of cases which at certain periods were noted too inefficiently to be of any value. Some few cases, in addition to these, as will be seen on perusal, I have alluded to separately for special reasons. By far the greater majority of the cases occurred at the Hospital for Children at Shadwell.

I. *Short or apparently short duration.*—Cases of indubitable enteric fever may occur at any age where convalescence may be established in a fortnight or less from the beginning or the apparent beginning of the attack. I use the qualifying term "apparent" with reason, for although, as we shall see below, quite a large number of attacks in childhood can be accurately dated as to the commencement of the *illness*, it is impossible to be certain in many cases that the temperature may not have been raised for some days before complaint occasioned observation. These cases may be fairly typical (with the exception of the fever course), or they may have but a few of the ordinary symptoms, *e. g.* one or two rose-spots only, and little or no diarrhœa, though they are generally characterised by some abdominal pain or tenderness, some tumidity of abdomen, and occasional loose motions, of the pea-soupy character. If there be normal motions or constipation, this class of cases will tend to overlap or be confused with the doubtful class; but I would regard several rose-spots, certainly more than one crop, as generally diagnostic, and even in their absence, concomitant cases of obvious enteric, beginning in a similar manner, in the same house, or in close contact with the case in question, would go far to remove doubt. Such cases as these are not common, I think, altogether; the majority of them, however, occur in childhood, and they are generally not severe. I have seen a few with ample eruption and much diarrhœa, but, on the whole, a careful study of all my recorded cases does not justify my believing that more than three or four can be placed in this class. Dr. Murchison records but 7 out of 200 cases of recovery (in which he was able to fix the commencement with tolerable certainty) where the duration

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did not exceed two weeks. By far the largest number of my cases at all ages, where the date of beginning could be fairly fixed, lasted three weeks or more, although many at first sight would seem much shorter. The question is one of much difficulty in decision. In another context, under the head of "treatment" at the end of this paper, I give notes of two cases, which, I think, well illustrate a short course of the disease.

With regard, therefore, to the opinion of Dr. Murchison, that many cases of enteric fever terminate at a comparatively early date, I would venture to regard it as liable to error, from the point of view that I have urged at the opening of this paper, for he follows up the statement of this opinion by these words, "Most of the febrile attacks known in this country as simple continued fever or 'febricula' are abortive attacks of enteric fever, terminating between the tenth and twentieth days. In these cases the inflammatory products deposited in the intestinal gland are probably absorbed, and ulceration never takes place." This argument is, in my opinion, as unconvincing as it is bold and unanswerable. We still desiderate much more observation and study on this point.

II. *The small fatality* of enteric fever in early life is generally observed and taught. To extract, however, the fatal cases from my own and others' records without qualification or comment would tell a different story. Out of the 62 cases I have tabulated for this paper, I find 6 deaths, the ages of the patients being respectively thirteen, twelve, twelve, eleven, nine, and four years. With the view of correcting or confirming my impression that the recognised low rate of mortality of enteric fever in childhood did not include its youngest subjects, I have referred to the last 'Report of the Statistical Committee of the Metropolitan Asylums Board.'* Out of 585 cases of enteric fever at all ages, treated at the Board's hospitals in 1888, 72 died, the mortality per cent. being 14·64. Of those cases treated, 13 were under five years old, and 2 died.

Further, Dr. Collie, in his book 'On Fevers,' gives, from the records of three fever hospitals in London during ten

* This work contains a mass of interesting information.

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years, the proportion of 8 fatal cases out of 72 admitted under the age of five years, or over 11 per cent.

In the next quinquennium of age (five to ten) we find the Board Statistics giving, for the year 1888, 7 deaths out of 65 cases, or under 11 per cent., and Dr. Collie gives (between the ages of five and nine) 40 deaths to 396 cases, or scarcely over 10 per cent.

Between the ages of ten and fifteen the Board gives (for 1888) 111 admissions and 16 deaths, or not much under their percentage of the total mortality at all ages, and Dr. Collie gives 836 and 108 deaths between the ages of nine and fourteen, or a little under 13 per cent.

My own small statistics give 1 death out of 7 cases under five years old, 1 death out of 30 cases between five and ten, and 4 deaths out of 25 cases between ten and fifteen. It may be said that on the whole these statistics seem to prove that the fatality of enteric fever is not, as is loosely taught, in exact inverse proportion to the patient's age, but that rather the disease tends to be mildest during about the middle quinquennium of what may be called childhood. And both the severity and the general clinical course of the cases approximate closely towards the end of the third quinquennium to the adult form of the disease.

Taking, however, into consideration the frequent tendency to class doubtful cases of other diseases as enteric, the overlooking of real cases, the frequent obscurity of diagnosis, and the great variety of character in various epidemics, it must be confessed that figures so far are not conclusive as to the comparative mortality of enteric fever in childhood; the probability on the whole is, I think, that with careful and intelligent treatment, and unremittent attention on the part of both doctor and nurse, the rate of mortality of children under fifteen years of age should be altogether somewhat lower than available figures show. I believe that cases scattered about in small numbers in general hospitals must necessarily, from the possibility of more frequent attention and minute observation, run a somewhat better chance, from treatment, of recovery, than numerous cases massed together in large hospitals, however skilful and hard-working the medical and nursing staff may be.



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I cannot of course give any pathological results of value from my records of fatal cases. Of my 6 fatal cases I could obtain post-mortems of only 3. (This failure from time to time in obtaining post-mortems is due to certain conditions which, though regrettable, are practically unavoidable in our Hospital for Children in the east of London). I subjoin short notes of the six fatal cases.

Case 1.—Girl, æt. 12. Much abdominal pain, about one daily "typical" motion, nerve-symptoms marked. Death probably in fifth week.

*Post-mortem.*—Deep ulceration near valve, perforation.

Case 2.—Boy, æt. 12. Moderate diarrhœa second week, constipation followed, nerve symptoms marked, some hæmorrhage three days before death at end of fourth week.

*Post-mortem.*—Deep ulceration and perforation.

Case 3.—Girl, æt. 11. Much diarrhœa and bronchitis throughout, otorrhœa, some abdominal pain. Death much exhausted in ninth or tenth week.

*Post-mortem.*—Extensive ulceration, nowhere deep.

Case 4.—Girl, æt. 13. Much diarrhœa and bronchitis, great wasting, late vomiting, death with convulsions on eighth or ninth week. No post-mortem.

Case 5.—Girl, æt. 9. Complicated with pleurisy and pericarditis, &c., died about thirtieth day. No post-mortem.

Case 6.—Boy, æt. 4. Typical case, severe bronchitis and laryngitis. Death in third week. No post-mortem.

As it happens, the above few cases are, I think, fairly representative. The post-mortem examination of adult cases that I have seen and had knowledge of at Westminster and elsewhere bears out the doctrine that long-continued diarrhœa, and general protraction of the fever even without marked diarrhœa, very often mean extensive (as regards intestinal surface) and probably successive ulcerations; while it is rather pain, often constipation in various degrees, and tremulousness which mark a deep, though often inextensive, lesion. At any rate one may be often able to make at least a fortunate prophecy as to the state of the intestine from the symptoms during life, and we learn the lesson not seldom that although cases which are marked by prevailing constipation are as a rule not fatal nor often very severe, there

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is the ever-present possibility, and in some a great probability of an ulceration which may be fatal from perforation. But we still greatly need such information on these points as we could best get from our large fever hospitals, or by the means of tables of large numbers of fatal cases, showing the post-mortem appearances by the side of the observed symptoms during life.

I append short notes of two fatal fever cases, over and above those I have tabulated, which I do not feel justified in regarding as enteric.

Case 1.—Boy, æt. 5. Admitted on fifth day of indefinite illness with sickness and pain in belly, bowels constipated till three days before he died one month after admission. A dusky papular rash, like that of measles, for one day soon after admission, no other spots, no bronchitis; spleen slightly enlarged. On the eighteenth day after admission he developed a discharge from both ears, and on the twenty-second epistaxis, which occurred in great quantities and seemed to be the cause of death. The temperature was uniformly high throughout.

*Post-mortem.*—Peyer's patches slightly congested; some blood-stained fluid in right pleura; petechiæ in stomach; spleen slightly enlarged; other organs normal.

Case 2.—Boy, æt. 6. Fell ill with malaise, followed by sickness and headache. No diarrhœa. Fever not remittent. Death eleven days after the beginning of illness. Three days before death an eruption of large round spots, red and disappearing on pressure, came out all over body; many were a quarter inch in diameter. Some of them became purulent, and one hæmorrhagic, the day before death. There was no post-mortem.

III. *Mode of onset.*—I have for long believed and taught that enteric fever in childhood, or at least the illness complained of, begins more definitely and suddenly than it does in later years. The ordinary teaching that the onset is gradual, insidious, and undateable is certainly inapplicable to a large number of cases under fifteen. I am not prepared to say anything definite about this question as it regards enteric patients generally, although I am much inclined to believe that the onset of the disease at all ages has nothing very

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distinctive about it either in mode or character, and that too much has been made of this point in the past as one of the classical distinctions between typhus and enteric.

I find 24 cases out of my 62 where the exact date of apparent onset could be fixed to the day by some definite symptom or symptoms, the child having been previously to all appearance perfectly well, and there are many more where the beginning of general malaise and loss of appetite could be very nearly dated. The definite symptoms to which I refer were: Headache almost always; shivering, in some cases amounting to rigors, exceedingly frequent; vomiting in the majority of these cases; very frequently pain in the belly, sometimes severe; and not seldom pain in the back or legs. In the class of cases with abdominal pain, some diarrhœa is often an early symptom, though generally not till the patient has been ill some days. Especially in young children I feel tolerably sure that a suddenness of onset of symptoms is the rule rather than the exception, and in the time of doubtful diagnosis when we have to do with a case of fever of say five or six days' standing without pathognomonic signs, and we have excluded what we should exclude, this symptom of suddenness may often help us towards the diagnosis of enteric fever. A continued fever of a week's duration following on a sudden attack of headache with vomiting, especially if the headache with loss of appetite and some nausea persist, is very often enteric, and should always be treated as such till the course of events teach us better. This point is one which I believe is well known to some observers, but it has been made less of than it deserves, and finds no place in the text-books.

IV. *Frequency of the characteristic eruption.*—It must be remembered that many cases are admitted into hospital late in the disease when this eruption may have disappeared, and that the eruption is almost always overlooked by the unskilled observer. Taking all the cases under analysis, well-marked spots were actually observed in hospital at some period or other in forty-eight instances; in three others there is the note of one or two doubtful spots seen but for one day, and rapidly fading. These spots are often in very small crops, and sometimes, but not often, seen only on the back. On

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the whole, my cases certainly teach the great frequency of this classical mark of the disease, and also no little tendency to a concomitance of copious rose-spots with a considerable amount of diarrhœa and a fairly severe course of the disease. The cases, on the other hand, with prevailing constipation are most often characterised by a small eruption, and are generally mild.

The *spleen* is enlarged at some time or other, so that it can be easily felt, in an immense majority of cases. I cannot speak, however, with any certainty as to a relative difference at various ages of this now well-known sign.

V. *Diarrhœa and constipation.*—The relative frequency of these symptoms perhaps does not differ much in childhood and in later age, but, as there is a somewhat common belief in the great frequency of constipation in childhood, I have thought the question worth discussion as far as possible. By constipation I mean not only the absence of diarrhœa and of occasional so-called enteric motions, but also the infrequency of motions of whatever character; but I include under the term the condition of bowel which permits an occasional formed motion to pass without enema or other purgative. By diarrhœa I mean the passage of more than three loose motions a day. In discussing the question I find one must be arbitrary in definition in order to be clear in expression.

The class of cases which are constipated throughout is probably considerably less than what would appear to many hospital observers or the rapid compiler of hospital notes, for there is often marked diarrhœa before admission. I do not include in the following cases the instances of constipation which are so very frequent after the subsidence of the fever.

Out of 61 cases in which I have notes of one or both of these conditions at different periods I find that

*During hospital residence* 28 had diarrhœa (6 noted as slight); 16 had constipation (many treated by enemas); 17 had neither condition.

*Previous to hospital residence* 28 had diarrhœa; 6 had constipation; 17 had neither, as far as could be ascertained; 10 were not noted.

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I find, further, that 12 cases had diarrhœa more or less throughout, 5 had constipation throughout, and 8 had neither throughout, the occasional motions being either loose and characteristic (in 6) or normal (in 2). Of the 16 cases which had constipation in hospital 8 were noted as having had previous diarrhœa.

On this point I have made further inquiries from a Sister at the Hospital for Children, who with an excellent power of observation has had a large experience of enteric fever cases under both my colleague Dr. Eustace Smith and myself. She tells me that although excessive diarrhœa is a rare thing in her experience, she can only remember one case in the last three years which was constipated throughout in the sense of never having a motion without the administration of an enema.

I should infer from my experience and knowledge generally on this point that, although a notable number of cases after admission into hospital, many of them at least as late as the end of the second week or much later, show constipation, the greater proportion of "constipation cases," both mentioned in books and believed in by some observers, is largely based on want of due inspection of the stools and forgetfulness that the major part of the disease has often run its course before it can contribute to statistics of practical value. It must, however, be conceded that a certain number of the reported cases of diarrhœa *before admission* may be the result of purgatives administered by mothers and medical men.

I believe that diarrhœa in the sense of three or four loose and offensive motions a day, and most often of a pea-soupy character, exists at some period in most cases. But I in no sense question the teaching of those who, like Dr. Collie, speaking with the highest authority on the subject, lay it down as an exception for excessive diarrhœa to occur. It is certainly rare to find at any age very large, frequent, and watery motions in cases of enteric fever which recover. Dr. Collie says in his above-quoted work 'On Fevers,' that "diarrhœa, by which is here meant six to eight considerable motions in the twenty-four hours, exists but in a small number of cases of enteric fever." It would be bold indeed

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to question in any point, even if one's own experience seemed to point another way, the conclusions of so excellent an observer and sound reasoner, based as they are in this instance on the knowledge of 4000 cases of this disease. The difference of opinion on this head is almost entirely due to the different use to which words are put; a cause which is at the bottom of many important controversies in medicine and other matters. At the best this term diarrhœa is somewhat vague, and largely one of degree; but I venture to think that the sense in which I use it is at least practical and fairly close to that in which the original historians of enteric fever employed it.

VI. *Heart signs and symptoms.*—With the rest of the bodily organs and functions the heart notably suffers in enteric fever. I am inclined to think that this fact too often escapes observation, and it is because it has come so often under my notice, even in the prevailingly mild fever of childhood, that I dwell on it in this paper. It is indeed frequently taught that in *severe* cases the heart's action is much weakened, and that the impulse and first sound may be much diminished in force and intensity. But I am convinced, from a careful and repeated observation of this point in nearly all my cases for many years, that there is scarcely any case of enteric fever in the second week and often earlier, which does not show a modification of the first sound of the heart obvious enough to attract the attention of any moderately careful tiro in auscultation. In fact, the heart signs in enteric are much nearer to those described by Stokes as common in typhus fever than is generally taught. The complete absence of the first sound for many days in cases which make a good recovery I have repeatedly observed, and there are many more in which the first and second sounds are nearly or quite indistinguishable by auscultation. In many I have observed a regular and rapid succession of similar short sounds, the normal pauses of the cardiac rhythm being entirely abolished. The impulse is always proportionately diminished or impalpable. In protracted or severe cases, moreover, it is often possible to demonstrate some ventricular dilatation, especially of the left side, and I have several times heard a well-marked but soft systolic murmur at the seat of the apex,

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which has disappeared after the establishment of convalescence.

Feebleness of the heart's action and some degree of dilatation may indeed be expected to occur, in the light of what post-mortem examinations have shown us. Softness, flabbiness, and thinning of the heart walls have been frequently found by Louis, Chomel and Jenner, and many other pathologists are finding them now; and there is frequent clinical evidence of this condition in many cases which recover, quite apart from physical exploration. No one, who has been obliged, as most of us at least sometimes think we are, to cause enteric fever patients to sit up, can have failed to notice the exceedingly great modification of the heart's action which takes place. I have seen it cause imminent syncope in some cases, and have grown cautious with experience. It is important to bear this in mind, too, in the treatment of convalescence, and to make it an absolute rule to be guided in our directions as to patients sitting up or getting out of bed by the results of careful and repeated examination of the heart. The observation of the radial pulse of a recumbent patient is not enough to tell us how the heart is working.

VII. *Signs of bronchitis*, more or less, with or without cough or respiratory trouble are rarely absent in enteric fever, and often last throughout the attack. Bronchial affection should not be regarded as a complication or sequela of enteric, so much as one of the ordinary expressions of the morbid process. Doubtless it is very often of no importance whatever from a practical point of view as touching treatment, valuable as it may be as a help towards diagnosis in doubtful cases, and its frequent slightness is probably the cause of its having been considered unworthy of mention by most authorities, Goodhart and Henoch being notable exceptions. Murchison noted it in but 21 out of 100 cases. If it be searched for it will be found in an enormous majority of cases, and, I think, at all ages, though perhaps more markedly in childhood. It may, as I have said, be almost or quite unevidenced by symptoms, or the symptoms may be those of any grade of respiratory trouble or cough. The gravity of the *illness* in some cases is mainly or wholly due to the bronchial involvement, which may, indeed, mask all other symptoms;

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and bad bronchitis in an already prostrate case of enteric darkens the prognosis, and often defies treatment.

I did not begin to examine the chest for bronchitic signs *regularly* till the last four or five years. But I find this condition noted in 34 out of my 62 cases; in most of the rest there is no mention of its presence or absence, though I frequently find the note "slight cough." The condition can very often be detected by examination of the front of the chest alone. It is never necessary to examine the back of the chest except when there are obvious respiratory symptoms, and not often then.

As to *broncho-pneumonia*, I find but 3 cases noted out of my 62; they were cases of unusual length, with much emaciation. The condition is most probably more often existent than discovered or noted. I have never seen a case of ordinary *lobar pneumonia* in the enteric of childhood.

VIII. *Temperature characteristics.*—I find on going over carefully the temperature charts of all my cases that scarcely more than half of them showed temperatures which could be called "typical" according to the classical account, including the cases which were admitted late in the disease. Now, not infrequent as such temperature charts are in adults, even without recognisable complications, I am under the strong impression that they are much commoner in early childhood; and this is in keeping with what we know of the greater instability of temperature and other phenomena involving the action of the nervous system in earlier life, and of the numerous apparently slight causes which may either raise or depress it.

The temperature very frequently touches the normal in in the earlier part of the fever-day in the case of children, and this not only in mild cases.

It must be observed, too, that it is pre-eminently true of the enteric of childhood, that severity of disease is not by any means always proportionate to the average height of the temperature. I have observed this very frequently at all ages, and it is a point of great clinical importance, both as regards prognosis, and as a frequent check on meddlesome, useless, and often harmful attempts at treatment.

Subnormality of temperature, to the extent of from one to

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two or even three degrees, is observed in a decided majority of cases of convalescence from enteric fever. This is especially so in good and uncomplicated convalescence, and in cases where there is a rapid recovery from great wasting. This condition may last for one or two weeks, or perhaps more. It is in my belief much more marked and common in childhood than in adult age, though I have observed it in some of my adult cases at Westminster. On the other hand, the temperature may rise and remain for a considerable time a few degrees above normal in children, when the bowels are allowed to remain constipated during convalescence. This temperature-rise accompanying constipation, when occurring towards the end of the fever, before complete defervescence, is not always easy to recognise and often gives us pause in the matter of treatment. Such a temperature falls on the administration of an enema. There are several instances in the records of the Hospital for Children of great rises of temperature accompanying constipation in cases where there is apparently no further disorder; and two cases of extraordinary temperature (107°—108°), stand out in my memory, where the children were quite young, admitted almost collapsed with greatly distended abdomens, and the temperature at once fell permanently to normal, with rapid recovery after the administration of an enema.

IX. *Relapse.*—In considering the frequency of this occurrence in childhood, as at all ages, we must eliminate those not rare cases of what has been termed recrudescence or a fresh outbreak of symptoms, such as diarrhœa, rose-rash or both, with increased temperature, before the fever has ceased. Many of these cases are loosely called relapses. It is this occurrence which, sometimes following indiscretions of dietetic treatment and visits of sympathising friends to hospital cases, gives rise to the widespread but somewhat vague belief that true relapses are often caused by a premature allowance of solid food. We must also exclude many instances of renewed pyrexia from complications or even constipation. By a "relapse" is meant a second febrile attack with distinctive symptoms after apparent convalescence has been fairly established. Most authorities agree in stating that relapses are not common, varying in number at all ages from

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about 3 to 8 per cent., that they are especially rare in childhood, that though they may occur later they mostly take place within ten days of the subsidence of the primary fever, and that they are as a rule shorter and less severe. They are not to be explained by the theory of re-absorption of poisonous material from the bowel any more than by errors of diet. The non-explanation of them probably depends on our imperfect knowledge of the origin and working of the specific poison.

I have but three cases of relapse in my note-books, as follow:

Case 1.—Boy, æt. 15. Admitted on December 31st, probably on eighth day of fever. Mild attack. Convalescence established on January 11th. On January 23rd distinct relapse (no spots), lasting till January 31st. On February 10th, another relapse, severer than the previous attacks, slight diarrhœa throughout; great exhaustion and wasting lasting till March 5th. During the last fourteen days of latter relapse temperature frequently touched the normal. The boy ultimately made a good recovery, the temperature remaining subnormal, between 98° and 96° from the 8th to the 28th March.

Case 2.—Girl, æt. 4½. Admitted with marked symptoms, diarrhœa, rash beginning five days after having been pronounced well from a well-marked attack of enteric fever before admission. Inquiry left no doubt of nature of primary attack. Relapse lasted six days; good recovery.

Case 3.—Boy, æt. 8. Admitted October 19th, 1879, about end of third week of disease. Temperature became normal on November 9th. On November 17th well-marked relapse began lasting till December 4th. There was but little diarrhœa, but some hæmorrhage later on; the occasional motions were of enteric character. There was much bronchitis, and during the relapse symptoms suspicious of meningitis, such as retraction of head, photophobia, drowsiness and marked "cerebral maculæ." Recovery good.

X. *Nervous symptoms*, either during or after enteric fever, are not frequently severe in childhood, according to most authorities, and my cases are in accord with the general teaching. Yet doubtless even in quite young children cases occasionally occur where the nervous symptoms are pro-

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nounced and prominent. I have never observed any of the local paralyses described by various authors as following on enteric fever, unless an occasional dysphagia (apart from anorexia, or refusal of food) may be attributed to some such cause. Deafness apart from peripheral trouble obtains in some degree perhaps in most cases. Symptoms as of meningitis in varying degrees I have more than once seen, but I know of but one case of definite meningitis which followed on purulent otitis; this case was under the care of my colleague, Dr. Coutts.

Mental changes, both in the direction of mania and imbecility, are, I should say, decidedly rare. I have seen several cases, however, where children after a severe or protracted attack have been more or less forgetful and silly, and inapt or unwilling to speak. And I know of two cases, one of which I saw, under the care of my colleague Dr. Eustace Smith, where there were acute maniacal attacks after the subsidence of the fever.

On the whole it is probably after the age of puberty that enteric fever most often sets its mark, sometimes not readily obliterated, on the nervous system or the body generally, and this because, as we have seen, the disease tends to be benign, as a rule, during the period of childhood.

Of the *laryngeal ulceration* mentioned as a not infrequent complication of enteric fever by several authors, and apparently common in some parts of Germany, I have seen but one probable case, in which unfortunately a post-mortem was unattainable. I have referred to this case above. Several others have shown slight symptoms of laryngeal affections as evidenced by hoarseness, &c. Nor can I give any example of what I should feel inclined to call diphtheria as a complication, although I have seen cases of marked tonsillitis, with patches of yellowish white exudation, with dysphagia. Doubtless cases of pharyngeal inflammation occur in enteric fever which can be with difficulty or not at all differentiated from diphtheria. Faucial complication should always be thought of in cases when food is not well taken. Refusal of food may be caused by the dread of swallowing.

*Hæmorrhage from the bowel* I have noted but four times in the sixty-two cases, in one case only copious, and never fatal.

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*Otitis* I have reason to believe is commoner than my list of cases would show. As evidenced by marked pain or discharge from ear, or both symptoms, I have notes of three instances.

Of *epistaxis* I have three noted cases, in one of which the symptom appeared to be the immediate cause of death. The percentage of cases showing the symptom is considerably greater than this according to many authorities, and especially in childhood. As far as I can learn, it is not a very frequent symptom in cases of children in England.

*Abscesses* have not been common in my cases. I have seen three, over the shoulder-joint, the upper arm, and the thigh respectively. No case of parotid abscess has come under my notice in childhood. I may add here that I have not seen a case of thrombosis of the veins of the leg, which, as evidenced by œdema &c., is not, I should say, a very rare event in enteric fever in adults.

I have purposely omitted the discussion of much of the subject matter of enteric fever which does not seem to me to specially come within the limits of this paper. In the above imperfect sketch I have merely endeavoured to touch upon the most salient and useful points which have struck me in the course of my study of this disease in childhood.

On the matter of *diagnosis* a few words may be said regarding some diseases which may be confused with enteric fever, either early or late in the course of the affection.

*Pneumonia* often begins like enteric fever in childhood. Careful examination of the chest generally removes difficulty, but not always, for pneumonia in childhood is sometimes not evidenced by any physical signs in the lungs till late in the disease, and sometimes lacks them altogether, and may be marked by but slight respiratory trouble. In the latter case (of which I have seen several instances) the diagnosis may be impossible till the definite end of the pneumonic fever removes all doubt. We must remember how frequently enteric fever in childhood begins acutely, and that the diagnosis of it in all cases, during the first week, is for the most part a process of exclusion.

*Meningitis*, especially tubercular, is not unfrequently a cause of confusion. At the outset it may be impossible to

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make a diagnosis sometimes. But before long we are generally helped by the cleaner or quite clean tongue, the normal or somewhat retracted abdomen, and the intense dislike of being disturbed which as a rule marks meningitis, before the more distinctive nerve symptoms set in and clear up the case.

*Bronchitis* is another cause of confusion. I have seen several cases of enteric fever in the second week or later taken for acute bronchitis. The temperature here may not be of much help, and when the abdominal signs and symptoms are slight or have disappeared our difficulty may be great. In children beyond the age of infancy the difficulty should be much lessened or removed altogether by remembering how rare a disease simple and extensive bronchitis is. I have in two cases been led, bearing in mind this clinical truth, to suspect, and soon to correctly diagnose, enteric fever, as proved by the sequel, by the mere presence of severe bronchitis with fever, no other evidence of enteric being obtainable.

*Phthisis* I have more than once provisionally diagnosed for a short time in cases of enteric fever late on. Much wasting, with bronchitic, and perhaps doubtful pulmonary signs, with other phthisical symptoms, are often the salient phenomena of enteric fever, especially late in the disease. Sometimes the correct diagnosis can only be arrived at by a careful retrospect on the recovery of the patient. The difficulty, however, is usually overcome by the exercise of careful observation and due thought.

*Acute tuberculosis* must be mentioned as a disease which *may* be mistaken for enteric fever after all possible care. Exactly alike, however, as these diseases occasionally are at the outset, the rarity of such acute tuberculosis must always be borne in mind. It is frequent enough to find a case of enteric fever at the first mistaken for acute tuberculosis on merely scholastic grounds, the emphasis laid on this possible confusion by the compendious text-books leading to a belief that the opportunities of mistake are common. I lately saw a case in an adult which turned out on the sixth day to be enteric fever, that seemed at first to several most careful observers to be almost undoubtedly acute pulmonary

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tuberculosis; but I cannot say that, with the exception of some temporary hesitation over one or two cases of tubercular peritonitis, the differential diagnosis of enteric fever and acute tuberculosis has been a matter of much account in my cases at the Children's Hospital.

Several other cases of confusion in diagnosis might be mentioned in an exhaustive treatment of the subject, but beyond the indication of the most important possibilities of error, I think that discussions on differential diagnosis are as a rule unprofitable, often misleading, and always incomplete. I would say finally on this head that enteric fever may begin in almost any way, and that the greatest care should be taken before it be positively excluded from the diagnosis of any case of illness where it might be suspected with even the faintest show of reason.

*Treatment.*—Although there is not as yet, and probably never will be, any antidotal treatment of enteric fever, it is a disease in which medical and nursing skill are often eminently able to avert the tendency to death. No disease requires or rewards careful tending more often than enteric fever. There is a considerable class of cases, as we have seen, which are mild in their course, and having but slight systemic and local effects do not call for any important treatment other than perfect rest and the administration of appropriate food and careful nursing. While a patient is able to take food well, and the bowels are not obstinately constipated, no medicine of any kind should be given. It would be well if in all cases of enteric we were never forced to put anything into the mouth but what is necessary to nutrition. When the power of assimilation fails the stress of the disease is great, and the nervous system greatly suffers; and neither in these nor in the moderately severe cases where children often take food very reluctantly, have I ever known the slightest improvement follow the administration of the so-called "stomachic" remedies, viz. acids, alkalies, bitters, bismuth, *et hoc genus omne.* When food is taken well, such so-called "aids to digestion" are always useless, and sometimes harmful. I am sure of this from observation. If it be necessary, as it often is, to give medicine for other than

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purely scientific reasons, a little citrate of potash may fulfil the purpose without any drawback.

As a food, milk and good beef-tea in various proportions according to the individual cases are mainly sufficient for all purposes when there is a readiness to take food; and custard-pudding may be often given as a harmless and pleasant variety. The quantity of milk should be less in proportion to the prevalence of constipation; and in cases where there are loose motions throughout, milk, or milk and barley water, may be given as an exclusive diet. Bearing in mind the fact that the heart is nearly always weakened in enteric fever, and markedly so when there is much fever, the patient, even if otherwise inclined, should be kept lying down, and should be propped up when allowed to sit up during the early days of convalescence. The constipation which nearly always in mild cases attends convalescence and may sometimes obtain throughout the fever should be treated by simple enemas, and preferably by small enemas, repeated if necessary, than by large ones. The indication for this treatment is not the absence of bowel action for several days, for this often requires no treatment at all, but the presence of general abdominal discomfort or distension or both, and especially the escape of flatus from the bowel and the presence of palpable scybala. This condition is often, after the true fever has subsided, accompanied by a slight rise, more or less lasting, of temperature, and soon disappears when bowel action is induced by enema. It is but in the severer cases, to be mentioned below, that the question of acting on the bowels becomes a problem of difficulty and requires a careful observation and consideration of the case in all its aspects.

A week after the subsidence of the fever, and all other symptoms being absent, the question of giving solid food may as a rule be entertained. I will not attempt to give any further detail as to this point; every case has its idiosyncrasies, and solid food is better tolerated and more needed in early convalescence by some than others. There is often a frequency of stools more or less unformed, or even for a while quite liquid, after the change from milk, &c., to more solid diet, which is by no means morbid. The medical man

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in charge of a case should always satisfy himself of the nature of such stools by personal inspection before he decides to continue or alter his patient's diet table. If the stools have in any degree the characteristics of the most ordinary "enteric" diarrhœa, or there be any abdominal pain, it will be necessary to stop the solid food; still more if there be any tenderness on pressure. Of late years I have been in the habit, in mild and uncomplicated cases, of frequently beginning all solid food quite a week earlier than had been my established custom, and I have had no reason to repent doing so in any case. I very much question, as I have already said, reviewing my whole experience, whether any case of relapse has been due to the premature resumption of solid food; at the same time we must never forget that an aggravation, even to fatality, of the symptoms of a case of enteric may doubtless be caused by rashness in this respect before convalescence is well established. Clinical experience is in exact accord with the teaching of morbid anatomy in these cases. At whatever date we decide to order solid food, the first experiment should be made with fish, or a little bread and butter, or a very little pounded meat, and ordinary food need not then, if all goes well, be many days deferred.

Coming now to the more severe cases, we shall see indications for treatment by bearing in mind the many troublesome symptoms, and the various dangers which tend to death.

*The stress of the fever* without any local trouble *may* kill, the patient yielding to excessive nervous exhaustion with or without a remarkably high temperature. We find all grades of prostration and nervous disorder in the enteric of childhood, but, generally speaking, the higher grades with increasing years. This class of symptoms depends much on the special nerve constitution of the patient. Some patients die early without fatal or excessive intestinal mischief, without sinking into what is known as the marked "typhoid" state, but with extreme weakness and some tremor on movement. These cases are generally accompanied by high temperature. Those who die apparently from exhaustion with but a moderate temperature have, I think, as a rule considerable diarrhœa, and probably, from the information that I have been able to gain in the post-mortem room, extensive,



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though but superficial, involvement of the intestines in its specific lesion. I cannot, however, speak very positively on this point. Marked and persistent tremor, as in adults so in children, points in my experience, as Sir William Jenner has especially pointed out, to deep ulceration. I have repeatedly in the case of adults, and sometimes in children, verified the prognosis on this ground of deep ulceration by the post-mortem examination, and the deep ulcer has been almost the only one, the remaining lesions being but slight and of very small extent along the bowel. Now, all such cases, whether marked or not by diarrhœa or very high temperature, require alcohol, and often in no small quantity. The *best* indication is the first heart-sound, provided it be not obscured by the bronchitic sounds which are of such frequent occurrence. If it be very feeble and short, or, as it often is, absent, or if it be replaced by a soft murmur, alcohol must not be spared. But there is one precaution which I think is often neglected, and which I took some time to learn. Alcohol is but at the best a temporary remedy for a temporary danger, albeit it often saves a life. Therefore it is always wise to omit it soon, and often for short intervals, studying in these intervals the state of the heart's action by the first sound or by the arterial pulses. If we persist with alcohol after its effect has been produced, we obscure the case, and may indeed bring about the very harm we are trying to combat. The omission or lessening of alcohol, when, though with the best intention, it has been given too long and in too great quantities, I have sometimes seen followed by a sudden amelioration of symptoms, which were doubtless caused by its poisoning the nerve-centres, and obscuring natural improvement, which had been going on all the time. The lesson to be learned by those responsible for the case is to avoid routine, and to be frequently or constantly in person or by deputy at the bedside. A case of bad enteric fever cannot be visited too often. Alcohol should always be lessened when the first heart-sound approaches the normal, and dropped when it remains fairly normal for twenty-four hours. It can always be resumed with immediate effect when such effect is possible.

*Pain in the abdomen and tenderness* require, as a rule,

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treatment by opium, with the exception of those instances of abdominal discomfort or even positive pain which we may be able from a general and careful review of the case to refer to an overloaded bowel. When the pain or tenderness is accompanied by tremors opium is absolutely necessary, and also when there is concomitant diarrhœa. The opium may have to be pushed to large doses, and in this case it is well, to guard against nausea, to give it alone, and not in the otherwise good preparation of Dover's powder.

Diarrhœa, or copious motions, more than three or at most four in the twenty-four hours, should, I think, always be treated by opium tentatively, beginning with small doses. The amount of diarrhœa which indicates opium cannot be stated definitely in writing; the necessity for the drug depends on the whole aspect of the case. Even in moderate diarrhœa, with marked pain or distension, I believe opium is almost always to be given. Of course, like alcohol, its effect must be watched, but with proper care its administration will rarely be regretted in these conditions. Prolonged and considerable diarrhœa means generally, I believe, ulceration extensive in area, whether it be deep or not, and, as far as clinical observation can show, liable though it always is to fallacy, there is nothing with which we can combat the local mischief so well as with opium. The contra-indications to opium are often extreme nerve-prostration, always marked respiratory trouble (*not* by any means bronchitic *signs* alone, or even some degree of frequent respiration), and great disinclination to take nourishment. But abdominal pain or great discomfort, diarrhœa beyond a certain and not very far point, restlessness and delirium of any considerable amount, all call loudly for opium. The opium may be given by the mouth or, in some cases, in a small enema of starch. Over and over again I have seen in some cases of enteric all these symptoms recede into the background, and appetite and strength rapidly return within twenty-four hours after the bold administration of opium, as a direct result, I believe, of its healing and sedative action. I should find it hard to treat some cases of enteric fever without alcohol, but harder still some without opium. Bismuth and other astringent remedies are also useful in diarrhœa, but to a less degree than opium, and

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I do not waste time with them in severe cases. On the whole it may be said that the active *medicinal* treatment of severe enteric fever consists in the careful and thoughtful administration of opium or alcohol or both in varying quantities and at varying times, and their equally careful and thoughtful diminution or omission. I say *medicinal* advisedly, as the unremitting attention of the nurse in giving nourishment, often with the greatest difficulty, is a far more active and important element in the safe conduct of some almost desperate cases.

It would be useless or worse to enter on paper into more details as to alcoholic or opiate treatment, as such are only applicable to individual cases.

It is necessary to remark while discussing the general treatment of enteric fever that a very large number of cases in children, including many not at all severe, cause great trouble in being reluctant to take food, and often refusing it altogether. I believe, from all I can learn from experienced nurses, that this is very characteristic of cases in childhood, the difficulty being rare with adults except when the case is severe. The same Sister at the Children's Hospital whom I have above quoted on another point tells me that in her experience, which is extensive, it is the rule for children in enteric fever to give much trouble in this matter, the very mildest cases being the main exception, and that she remembers only two cases of any severity which took their food readily throughout. Both of these were very protracted cases, with long-continued diarrhœa, but ultimately recovered. The tongue is but slightly affected in many of these patients who refuse their food, and there is no discoverable pharyngeal difficulty. In not a few cases it is absolutely necessary to feed the patients by a tube passed through the nose. Much of this difficulty can be explained in all probability by the youth of the patients, who naturally, even when well, make no effort to do what is irksome or not pleasant, but I consider it worthy of remark, if only to emphasise the teaching that refusal of food or great unwillingness to take it is not to be regarded as of bad augury, as to some extent it is in adult cases.

*Constipation* is, as we have seen, a not infrequent condition in the enteric of childhood, and often calls for treatment.

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It must ever be borne in mind that although as a rule the most severe cases are those characterised by diarrhœa, constipation may accompany the fever throughout in cases severe in their course, and in those also which, though not apparently severe at first, may end in deep ulceration, or even in peritonitis or fatal perforation. In view of such possibilities, the question of the propriety of stimulating the bowel action is always one for grave consideration. Still, in most of the cases where constipation obtains and is apparently causing both distension and discomfort, and especially when there are no marked nervous symptoms and an absence of tremor, the administration of small simple enemas, till the desired effect has been produced, may be safely employed, and is usually followed by the best results. In cases not altogether infrequent where obvious fæcal masses are felt in the sigmoid region I rarely hesitate to adminster an enema at once. There are, however, many cases of enteric when the bowels are not opened for many days, in which no treatment is necessary. I but very rarely give an aperient by the mouth till convalescence is well established, and scarcely ever require their aid at all at any period of treatment.

Doubtless much of the constipation occurring during and after the fever is causally connected with the prevalent milk diet of the patients combined with prolonged rest. A reduction of the quantity of milk and appropriate modification of diet is thus often rendered necessary.

*Hæmorrhage from the bowel* but rarely calls for treatment in any case of enteric. When it occurs late it is generally portentous of great danger, and should certainly be stopped if possible. It is probably always impossible to do so, though alarming hæmorrhage may cease naturally. It is well, if conditions permit, to diminish the alcoholic stimulant, if such is being taken, for a short time, and opium should be pushed. I do not think that any other drug need be tried, with the exception of perhaps ergotine. In most cases no drug is of any value. One case of fatal hæmorrhage in an adult, or rather of death following two days on severe hæmorrhage, without any previous alarming symptoms, showed post mortem two deep ulcers, just above the sphincter ani, from which the blood had issued; there was

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no considerable ulceration elsewhere. Had this seat of hæmorrhage been suspected it could obviously have been treated locally, and in view of such a case, I should in the future see what could be done by local examination and treatment. Such cases must, however, be exceedingly rare; as no literary authority, out of many important ones that I have consulted, has any mention of them; but I am informed by my colleague, Dr. Hebb, that he has seen one other such case. Hæmorrhage in the early stage of enteric is scarcely ever of grave import; it may or may not accompany considerable diarrhœa, and in the latter case opium or some other astringent should be administered.

*Vomiting*, early in the fever, is common enough in childhood, and is of short duration as a rule. Later on, in the second, and still more in the third week, it is of serious significance, and much complicates the difficulty of keeping the patient alive. Help may be derived from morphia injections, or sometimes from the administration of bismuth, or other remedies for gastric irritability, by the mouth. In severe cases the food may *possibly* be introduced into the stomach by a tube, often preferably passed through the nose.

The question of the treatment of *high temperature* in enteric fever has furnished a severely fought battle ground for therapeutists; but, as regards this matter in the enteric of childhood, at least, I feel able to speak with no uncertain sound, and my experience in enteric at all ages strengthens my view.

The temperature of the skin and mucous orifices in enteric fever can indubitably be lowered by various methods, and notably by large doses of quinine, by antipyrin, and by cool baths. The reduction of temperature by these means is notable in proportion to its original height; a moderately high temperature is much less affected by them. But the question at issue is mainly, at least in England, confined to cases of more or less persistently high temperature. Few men of experience will treat all cases by a routine use of antipyretics. At the outset I would say that antipyretics of any kind are very seldom indicated, and scarcely ever do any important good, even in the cases where we seem almost driven to use them. I have given quinine and cool baths full and numerous trials,

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and, with exceptions to be presently mentioned, have almost abandoned them. From the comparatively small trial I felt justified in giving to antipyrin, I have nothing but evil to speak of it, invaluable as that drug is in almost innumerable cases of nerve pains. Antipyrin lowers temperature markedly in enteric, but the patient is the worse after the operation; it increases or causes prostration if given in sufficient doses to induce a reduction of temperature, it notably weakens the heart's action, and not seldom causes nausea or vomiting. I have myself seen instances of this in my own practice, and in that of others, and have heard of several more. To a far less degree, I believe, quinine is often harmful, and I have frequently seen in my own practice a patient rapidly improve on the discontinuance of this drug, though the temperature as rapidly rose again. At the best, quinine, as a rule, only spoils the temperature chart, and may obscure valuable indications for prognosis and treatment. And it is almost always inoperative as an antipyretic, unless it is given in doses very likely to cause quinism, a condition not desirable to a sufferer from enteric, and is conducive, I think, to nerve-prostration.

For this same purpose, viz. the reduction of temperature, I am an enemy in most cases to systematic cool bathing, or to speak more definitely, to bathing which rapidly and markedly reduces temperature. However carefully this treatment may be applied, it prevents rest, which is so all-important in the very cases, the severe ones, which generally are treated in this manner; the more energetic the treatment, the more danger there is in this direction. We can never remember too often that high temperature by no means coincides, with the exception of some rare cases, with a necessarily severe attack of enteric. Many cases run their course most favourably with a high average temperature, and others cause great anxiety throughout with a low one.

But occasionally placing the patient in a tepid or cool bath, and frequent, perhaps very frequent, tepid or even quite cold sponging is an exceedingly useful element in the palliative treatment of enteric fever. I think that nearly every case is the better for it. I am sure that they are more comfortable. The less prostrate the patient is, the more

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I would use the bath: with much prostration I use only sponging. Both of these methods soothe the patient, induce sleep, diminish delirium, and moreover tend to ensure cleanliness. Successful treatment of enteric is much helped by this remedy, but I must again repeat that the more seriously ill the patient is the less active should be the treatment by bathing. In the numerous cases where there is much respiratory trouble or where there is much heart weakness the bath should never be given. In enteric fever of all ages I am of opinion that the temperature need scarcely ever be treated *per se*. And in those rare cases which may be denominated hyperpyretic we may generally satisfy our minds by giving large doses of quinine. The temperature can thus be reduced; and that is all we can do; the result is but seldom satisfactory. A word may be said, in this context, of treating those few cases of enteric which may be seen at the very beginning by considerable doses of quinine throughout. Here a wider action of the drug than depends on its mere antipyretic quality may be thought of; and, although I must confess that all analogy and what we know of the course of germ-diseases and the possibility of their poison being modified by drugs, points to the improbability of success in this direction, I think, from a few experiments made at the Children's Hospital, Shadwell, that such a course might just possibly be worth further trial. The experiments were made by my friend, Mr. Scott Battams, late for several years Resident Medical Officer. The cases were taken early, and of course had they not begun after the enteric pattern and in one case at least come from a house where enteric fever was already existent, the ordinary doubt as to the diagnosis before the end of the first week would apply. In fact, such a doubt could never be quite eliminated. Suffice it to say that in a few such cases treated in this way, after a short illness, by Mr. Battams for some four or five days, the temperature fell not to rise again, and the affection seemed to abort. Such experiments as these, however inconclusive they may be, may justly be tried on the chance of advantage, when they are not demonstrably useless, and are not capable of harming the patient. The fact, as I believe it to be, that none of the grave phenomena of *established* enteric

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other than the mere temperature are favourably affected by doses of quinine, however large, does not militate against the *possibility* of good being done at the outset of the affection.

The cases which follow are of considerable interest, quite apart from this hypothetical question of treatment. I have not included them in my list analysed above, though I believe them both to have been enteric. They *prove* nothing as regards the effect of treatment, in fact they probably show that the effect was *nil*; different minds, however, will draw different conclusions on this point. At any rate, they are good instances, if regarded as enteric, of short duration. In the untreated case the fever practically ended on the fourteenth day, in the treated case on the twelfth day.

Case 1.—Edward S—, æt. 5, admitted October 20th, 1887.

*Symptoms, &c.*—Face very flushed, both cheeks, complexion otherwise dusky; drowsiness, headache, has smell of enteric.[1] Pulse 130. Heart-sounds fair, no abnormal signs in lungs. Abdomen somewhat tumid, not tense. No pain complained of, but some tenderness. Three or four typical rose-spots in right hypochondriac region. Liver normal. Spleen just felt. Tongue coated at back, tip and edges abnormally red. Takes milk well. Temperature, 6 p.m., 103·2°.

*History of attack.*—On the 13th patient came home from school with a headache. Diarrhœa a few days after, light brown watery motions. Bowels open four times the day before admission; and pain in belly complained of.

One brother is now in hospital with symptoms of enteric fever. A sister, æt. 2¾ years, has been suffering for some time with much the same symptoms, which were said by a doctor at home to be those of enteric fever.

October 21st.—Bowels not open since admission. Temperature, 10 a.m., 101·2°.

The patient was treated with quinine, as will be seen below. The temperature fell to the patient's normal on the 25th October. There were three stools, loose, between October 21st and 25th.

[1] I think there is an odour more or less proper to enteric, apart from the stools.

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Case 2.—Alfred S—, brother of above, æt. 7, admitted October 18th, 1887. (This case was under Dr. Eustace Smith.)

*Symptoms, &c.*—Dull and listless, complexion dusky, blush on each cheek. Tongue coated at back, tip and edges abnormally red. Abdomen prominent, not very tender. Resonant to percussion, gurgling in right iliac fossa. Spleen felt half an inch below ribs. Liver normal. Two or three rose-spots on abdomen and back. Nothing abnormal about chest.

*History of attack.*—Illness dates definitely from 13th. Headache, loss of appetite, motions soon afterwards liquid, light and dark brown; pain in abdomen, chilliness. October 18th, one motion since admission, loose and dark. October 20th, abdomen more tumid and tense; one motion, fairly "typical." October 19th, two motions. October 20th, three. The temperature here fell to normal and remained so, but the stools continued somewhat loose for some days apparently. No medicinal treatment.

I append a short abstract of the temperatures of the above two cases in parallel columns with the doses of quinine given to Case 1.

| | Case 1.—*Highest.* | | *Lowest.* |
|---|---|---|---|
| | Oct. 20. 103° | ... | 101·2° |
| (gr. 12) | „ 21. 103° | ... | 101·4° |
| (gr. 32) | „ 22. 103° | ... | 101·6° |
| (gr. 40) | „ 23. 101·6° | ... | 100° |
| (gr. 40) | „ 24. 100·8° | ... | 100° |
| (omitted) | „ 25. 99·8° | ... | 98° |
| „ | „ 26. 99·8° | ... | 99° |
| „ | „ 27. 99·6° | ... | 98·4° |
| | Afterwards no change. | | |

| | Case 2.—*Highest.* | | *Lowest.* |
|---|---|---|---|
| | Oct. 18. 103·4° | ... | 100·2° |
| | „ 19. 102° | ... | 101·4° |
| | „ 20. 101·4° | ... | 99·6° |
| | „ 21. 101° | ... | 100° |
| | „ 22. 101·2° | ... | 99·4° |
| | „ 23. 100·6° | ... | 100° |
| | „ 24. 100·8° | ... | 99·2° |
| | „ 25. 101° | ... | 99° |
| | „ 26. 100·2° | ... | 98° |
| | „ 27. 99·4° | ... | 98·6° |
| | Afterwards no change. | | |

It will be seen that in the case treated by quinine higher temperatures were registered than in Case 2, which came on two days earlier, and that the fever, which began probably on the same day in both, as the illness did, ended two days earlier in the quinine case. I do not myself consider that the quinine had anything to do with the result, and there were those who doubted that the cases were enteric fever.

Finally, I would express my opinion that outside fever hospitals enteric fever cases should be few and far between

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in general wards. In fever hospitals with wards devoted to enteric the objections to massing cases together are probably but few. *Adequately officered and nursed,* probably nothing can be much better altogether than wards occupied solely by enteric cases. But in general hospitals, and especially in hospitals for children, where the nurses are generally young, I cannot avoid believing, from some remarkable experiences, that the disease shows a greater tendency to spread when several cases are collected in one ward. This point can scarcely be proved, but the *primâ facie* evidence is certainly great enough, in my opinion, to render caution in this matter an imperative duty.

I have already said that I am in accord with Dr. Collie and others, who, with some of the older authorities, believe that enteric fever is infectious in some degree. But it must be well understood that it does not follow that cases should not be mixed with others in a ward. All experience proves that, with proper precautions, this can be safely done, and in private cases the doctor who, in addition to giving the usual caution, advises the younger members of the family to be little or never with the patient, will have done his duty as regards this matter of possible infection. It is probably only close contact which is risky in the case of one patient.

Write and speak as one may of the treatment of enteric fever in general terms, the inadequacy of the attempt to practical usefulness strikes one more and more the greater one's experience becomes. Each case, with its numerous and its *varying* symptoms, demands constant attention and often ever-varying treatment. And no bad case of enteric fever can be treated in the best manner by any rules whatsoever. The successful treatment of those not rare cases where treatment makes the difference between life and death requires not only knowledge and experience, but the most careful thought and clinical acumen, and no consideration should prevent him who has the charge of such a case from visiting it as repeatedly as possible. It is not too much to say that enteric cases are not rarely lost by the want of proper skill or attention; by neglect no less than by meddlesome treatment; both the one and the other being equally the offspring, not of carelessness, but of ignorance.

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A last word with regard to the all-important point of nursing. Let the medical man in charge of a case of enteric fever in a child secure, if possible, the services of a good nurse who has had experience in such cases. He will find in such a nurse an invaluable assistant. Often does the life of an enteric fever patient depend on the constant care of a really skilful and conscientious nurse. Any case of enteric fever is almost as much a nurse's case as a doctor's; and in a bad case, a doctor unaided by a good nurse is at the greatest disadvantage, and sometimes almost helpless.

P.S.—I append some figures kindly supplied me by Mr. F. N. Hume, Assistant Medical Officer of the South Eastern Fever Hospital, showing from the records of that institution the incidence of enteric fever at various ages during seven years of the current decade, with the percentage mortality. I would here also express my thanks to Dr. Shaw, late Clinical Assistant at the East London Hospital for Children, for much help rendered me in the compilation and tabulation of cases.

| Age. | Admissions. | Deaths. | Mortality. Per cent. |
|---|---|---|---|
| Under 5 ... | 19 ... | 2 ... | 10·5 |
| 5—9 ... | 69 ... | 1 ... | 1·4 |
| 10—14 ... | 117 ... | 17 ... | 14·5 |
| 15—19 ... | 124 ... | 19 ... | 15·3 |
| 20—24 ... | 64 ... | 12 ... | 18·7 |
| 25—29 ... | 53 ... | 14 ... | 26·4 |
| 30—34 ... | 23 ... | 4 ... | 17·3 |
| 35—39 ... | 14 ... | 3 ... | 21·4 |
| 40—44 ... | 12 ... | 3 ... | 25· |
| 45—49 ... | 9 ... | 0 ... | — |
| 50—54 ... | 4 ... | 1 ... | 25· |
| 55—59 ... | 1 ... | 0 ... | — |
| And upwards ... | 2 ... | 1 ... | 50· |

The total mortality at all ages of these cases is 13·1 per cent.

The total mortality of the cases admitted into all the Metropolitan Asylum Board Hospitals in 1887 (441) was 13·8 per cent.

In the year 1875 the total mortality was 24·68 per cent., the highest recorded in these hospitals.

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# TUBERCULAR DISEASE OF THE BREAST.

By N. C. MACNAMARA.

The earliest reliable account I am acquainted with regarding tuberculosis, a scrofulous disease of the mammæ, is given by Benjamin Bell in his admirable 'System of Surgery' (seventh edition, published in 1801); he states that tumours of the breast of a scrofulous nature are occasionally met with, which from inadvertency are sometimes mistaken for those of scirrhus. Bell adds that he believes mistakes of this kind have tended to raise the reputation of medicines, particularly of *cicuta*, and that they have been the cause of tumours being extirpated which ought not to have been touched. "When scrofulous tumours are deeply seated, they have commonly a degree of firmness which they do not possess in the more external parts; and when in a suspicious situation, as in the glandular part of a woman's breast, they are very apt to be mistaken on a slight examination for swelling of a scirrhus nature. These mistakes, however, may always with due attention be avoided. Even the firmest kind of scrofulous tumours are soft and compressible when compared with scirrhus. They are of an equal smooth surface; they are seldom in their early stages attended with pain; and for the most part similar affections appear in other parts of the body, whereas the real scirrhus tumour is always unequal or knotty on the surface; and although it does not for a con-

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siderable time become uniformly painful, a stinging disagreeable pain is commonly felt in it from time to time, and from its first appearance; and it is not necessarily connected with symptoms of scrofula."

Sir Astley Cooper published his work on 'Diseases of the Breast' in 1829. In the eighth chapter of this treatise he states that in young women suffering from scrofulous enlargement of the cervical glands he has occasionally, though rarely, seen tumours of a scrofulous nature form in their bosoms, confined in most cases to a single tumour of one breast. He states that these tumours are unattended with pain, are distinctly circumscribed, smooth on the surface, and scarcely tender to pressure. They are very indolent, and vary with the state of the constitution, diminishing as it improves, and increasing as the general health is deteriorating. They are to be distinguished from simple chronic inflammation by their history and absence of tenderness. Sir A. Cooper states that these tumours produce no dangerous effects, and do not degenerate into malignancy. They do not require an operation, and indeed it would not be justifiable to remove them by the knife. But Sir Astley remarks, "I have seen them removed, from an error of judgment respecting their nature, and when cut into after their extirpation they are found to be composed of a loose and curdy fibrine, very unequally organised."

From the time of Bell and Cooper little, if anything, was added to the knowledge possessed by surgeons regarding scrofulous disease of the mammæ, until 1853 when M. Velpeau published his work on 'Diseases of the Breast.' He describes tuberculous tumours under three heads, the Disseminated, the Multiple, and Purulent; in the first form he states that the tumours are sometimes met with to the number of eight to twelve in the same breast, varying from the size of a hazel nut to that of a walnut, and seemingly made up of so many lobules and fibro-cellular tissue. Almost all the lobules, which are often softened at the centre, are infiltrated, or filled with tuberculous or caseous matter with little foci of greyish, serous, and flocculent pus. In one case the disease was of four years' duration, and had, the patient said, been induced by a blow. One of the axillary glands, which

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had become as large as a walnut, was covered with tuberculous or cheesy lumps. Of the purulent form of tumours, M. Velpeau remarks that "tuberculous tumours, without general tuberculosis, may chance to occur in the breast. They are usually single and have no fixed size or form. Lumpy and irregular in shape, they may present themselves in the centre of the gland just as under the skin, but more commonly they become developed beneath the mammæ; sometimes accompanied by sub-inflammatory symptoms. Velpeau reports various cases illustrating his account of this disease; in one, a woman aged thirty, who had suffered for two years from a tumour of the breast, it was as large as a hen's egg, lumpy, moveable, indolent, and situated between the lobules of the mamma; it was elastic and tolerably hard. The patient had no organic lesions. The tumour was excised; masses of various size, the result of exudation, were found. The patient in three months developed glandular tumours in the neck, and died subsequently of tuberculous cavities in both lungs.

Subsequently to the publication of Velpeau's work Dr. Dubar in his treatise "Tubercules de la Mamelle" printed in 1881, has given us the fullest account as to these affections of the breast. Dr. Dubar, like Velpeau, recognises two forms of tubercular disease of the breast, the disseminated and the confluent; he states in both forms the affection produces no pain, in its early stages its progress is slow; the axillary glands are almost always involved and frequently suppurate, leaving sinuses through which caseous particles and a sero-purulent fluid is constantly draining away.

In the disseminated form the breast does not increase in size; but a rough, nodulated, hard substance is felt in the gland. This lump may grow to about the size of a walnut: there may be more than one such nodule in the affected breast; the tumour is slightly mobile and seems to form a part of the gland substance. The skin does not adhere to the breast over the tumour and the nipple remains normal. The nodule may have been noticed for several years, and ultimately disappear, or it may suppurate and be eliminated through an opening in the integument.

In the confluent form of tubercular disease of the mam-

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mary gland the tubercles have a tendency to spread with considerable rapidity, so that the affected gland may increase to double its volume in the course of a few days or weeks. There is commonly pain and considerable fever in cases of this kind. On examination we find that the growth is usually more advanced in one portion of the gland, and even in the early stages of the disease indistinct fluctuation can be felt. In other portions of the gland when the disease has not advanced so far a diffused swelling exists; the skin moves over the gland, which is not abnormally adherent to the deeper parts. Fistulous openings form through sinuous passages deep into the substance of the gland. While these changes progress in the breast the axillary glands become affected in the same way and not unfrequently tuberculous growths occur in the lungs.

The diagnosis of these tuberculous tumours of the mammæ, especially in the disseminated form, is a matter of considerable difficulty, and can hardly be satisfactorily arrived at in some cases, unless by means of an exploratory incision. For instance, almost all the authorities I am acquainted with state that there is no retraction of the nipple, and little if any pain in tubercular (disseminated) tumours of the breast, but in the following case, which occurred in the Westminster Hospital under my care, and which was reported to the Pathological Society by Dr. Hebb ('Transactions' for 1888, p. 447), both retraction of the nipple and pain were prominent symptoms of the disease. The symptoms closely resembled that of a malignant growth. A phthisical woman, aged thirty-five, the mother of eight children, had noticed a swelling in her left breast a few days before admission into the hospital, but she had suffered from a constant dragging pain in the breast for two or three months. On admission the patient complained of a sharp shooting pain in the breast; there was a hard nodule in the substance of the gland near the nipple, which was much retracted. The nodule was freely moveable but painful on manipulation. There were some small indurated glands along the free border of the pectoral muscle. I excised the nodule with a portion of the gland surrounding it, and Dr. Hebb reported that the morbid growth consisted of tubercular nodules, some of which were

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breaking down. In one or two places the tuberculosis seemed to have primarily involved the ducts, but in most specimens the nodules were observed just without the glandular tissue, embedded within the connective tissue. The tubercle bacillus could not be discovered.

In the 'Lancet' for June 1st, 1889, Mr. Mackellar has reported an interesting case of tubercular disease of the breast.

R. F—, æt. 21, single. There was no family history of consumption in any member of the family. Her father and one brother are subject to fits. She had had no serious illnesses, but had been subject to fainting fits since five years of age. The last fit occurred six months before admission, and the one which preceded it about a year and a half before that. She noticed a lump in the left breast six years ago; it was then about the size of a hazel-nut. This was not painful until two or three months before being seen, since which time there had been some pain occasionally in it, especially at night after exertion in the day, the pain being of a shooting character, making her feel faint. Twelve months before this she noticed a small lump in the left axilla, which had latterly increased in size.

On admission, she was a well-developed girl with light hair, somewhat anæmic in appearance. She complained of a swelling in the left breast. This was situated in the margin of the breast at the upper external quarter, was oval in outline with a slightly irregular margin, and adherent to the skin over it, which was very faintly discoloured at the point of attachment. It appeared to be continuous with the breast tissue, but did not drag upon the nipple when moved. It was firm to the touch, but when fixed fluctuation could be detected in it. There were some enlarged glands in the axilla connected with the breast tumour by a hard and slightly nodular cord extending along the lower border of the pectoralis major. The nipple was well-developed and normal. There was no evidence of disease elsewhere.

On June 6th, ether having been administered, Mr. Mackellar cut down upon and incised the breast tumour, evacuating a small quantity of purulent fluid with caseous matter. The whole mass, including the hardened cord lead-



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ing to the axilla and several enlarged axillary glands, were then removed, the wound sutured, a drainage-tube inserted, and antiseptic dressings applied. On examination of the parts removed, there was found to be a cavity about the size of a large hazel-nut with thickened walls, which were granular on the surface and somewhat irregular. This cavity was filled with thick pus, mixed with calcareous particles. The surrounding gland-tissue was healthy. The largest of the axillary glands with which the mass was connected presented on section several caseous nodules, just commencing to soften. The smaller glands on section were tinged yellow in the centre, but not softened.

The wound united well, and was entirely healed by June 15th, the drainage-tube and sutures being removed on June 11th. A small punched-out ulcer appeared on the outer side of the wound on June 15th, which was due apparently to the breaking down of a nodule of the original tumour left behind, as it had no connection with the wound. She was discharged cured on June 23rd, and has since continued in good health. Microscopical examination of the wall of the abscess cavity and of the affected glands proved the tubercular nature of the disease.

In this case the tubercle was confined to the affected mamma and the corresponding axillary glands; and there was no history of phthisis or other indication of constitutional disease. I think it quite possible that not a few of the cases of supposed malignant disease of the breast which are said not to have recurred have been instances of tubercular tumours such as that described in the above case. Nevertheless, I am distinctly of opinion that in all doubtful cases our proper course is to remove the morbid growth; for, supposing it is tubercular, it is far better to take it away in an early stage rather than leave it to spread to the lungs or other organs; and if cancerous, our best, in fact only, chance of curing the disease is by its complete and early removal.

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# FORMS OF EMPYEMA IN CHILDHOOD AND THEIR TREATMENT.

By Dr. STURGES.

Nowhere, I think, is the advance of the art of curing so conspicuous as in the empyema of children. A disease with little tendency to cure itself and in the treatment of which the patient was formerly put to much suffering with doubtful advantage, is now by the simplest procedure got rid of almost with certainty; while the fact of recovery is not more obvious than is the agency through which it is brought about.

Forty years ago puncture of the pleura was a rare operation. "On six occasions," said Sir Thomas Watson in his lecture upon pleurisy, "I have myself witnessed the evacuation by puncture, from the human pleura, of a clear transparent liquid. . . . I have twice seen pus let out by the primary puncture of the chest" ('Lectures,' p. 133, vol. ii, 3rd ed., 1848). Thirty years ago Dr. West, then physician to the Hospital for Sick Children, speaking of the treatment of pleurisy, expressed himself thus:—"Often after the acute symptoms have subsided the affected side remains dull and the respiration scanty for several weeks together; and now is the time when the use of blisters associated with the exhibition of small doses of calomel will be of most essential service and will generally effect the complete absorption of the fluid." "Sometimes, however," he goes on, "in spite of remedies perseveringly employed, one side of the chest remains full of fluid, and the question then comes before us whether it will not be expedient to let out that fluid

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by mechanical means." Dr. West declared himself in favour of that procedure, though his experience of the operation was limited and his opinion, as might have been expected, was in advance of the time. He expresses the fear that "in former years life had been sacrificed by delay and an unfounded hesitation to puncture the chest" (Dr. West's 'Lectures,' 4th ed., p. 349).

Such was the state of things before aspiration, before antiseptic surgery, before free drainage and resection of rib. What is it now? It is the verification of Dr. West's warning thirty years ago as to the evils of delay: demonstration of the fact which he suspected, that the real danger lies not in meddling with "the human pleura," but in letting it alone. Empyema is now cured upon the simple plan of not suffering it. Modern instruments and precautions are no doubt helpful and important, but before all is the assertion of the principle that pus within the pleura is not to be tolerated, and the observation that it is not otherwise removeable than by suitable mechanical means. It is, indeed, in the full acceptance of that doctrine, it is in recognising the necessity, not only of evacuating the pleura, but evacuating it freely and taking out of the way whatsoever opposes free vent, that we reach a short description of the treatment of empyema as it is to-day, with its most recent development in rib-resection.

In the belief that even now empyema is sometimes left unrelieved, whether from its not being discovered or from "an unfounded hesitation to puncture the chest" still lingering amongst us, I propose briefly to review some examples of the disease that have been under my own treatment during about three years. They are not the latest or the best cases, but I think they are the most instructive as representing a transition period or process of conversion in my own mind from an exaggerated belief in the efficacy of aspiration to a full trust in the merits of free drainage; and if I mistake not the right treatment and the wrong will stand out clear and distinct upon a simple recital of the facts.

But first it may be well to consider how empyema kills; in what association; and how often. At the Hospital for Sick Children it is amongst the commonest diseases, the

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children of the poor, for pretty obvious reasons, being its favourite subjects. The annexed table gives all the fatal cases brought to post-mortem examination in the course of six years (1876—82).

| | | | |
|---|---|---|---|
| Number of deaths with empyema in six years . . . | | | 24 |
| Ages of death respectively: Infants . . . . | | | 11 |
| Between 3 and 4 . . . | | | 7 |
| „ 4 and 5 . . . | | | 4 |
| 5 years old . . . . | | | 2 |
| Associated diseases: | | | |
| Tubercular . . . . . | 9 | | |
| Pneumothorax . . . . . | 3 | | |
| Abscess beneath diaphragm opening into pleura . | 1 | | |
| Pertussis . . . . | 1 | In these three small undiscovered empyemas were revealed post mortem. | |
| Bronchitis (dilated heart) . | 1 | | |
| Pneumonia . . . . | 1 | | |
| Double empyema in 8 { In 4 pus both sides. In 4 serum one side, pus the other side. | | | |

In this enumeration the three examples of small and undiscovered empyema may be disregarded. Their presence had little or nothing to do with the fatal result. With our best care these tiny pus collections must sometimes escape notice, and, in my own belief, they tend to become inspissated and obsolete. In like manner the three cases of pneumothorax and the abscess bursting into the pleura may be put aside as not being empyema only. The chief significance of the table lies in its larger figures: in the nine examples of tuberculosis, some of which it is not improbable were induced by the empyema; and most of all in the eight cases of double empyema. These last represent a large proportion of the total mortality—not much short of half of it, if the seven irrelevant cases be excluded—a proportion which it is not too much to believe, looking to the facts that are to follow, would show far less in an enumeration of to-day than it does in these figures of some ten years ago.

Empyema is both more common and more insidious in the child than in the man. No doubt the child's empyema, like the adult's, often begins with acute pleurisy or acute pneumonia. But there are other modes of origin, perhaps more frequent and certainly more likely to be overlooked. Thus empyema is often the result of scarlatina or of measles,

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developing very gradually and remaining for long unperceived; and often it commences yet more stealthily, without either specific fever or acute attack, and is not discovered until such time as the general health begins to suffer from its presence and the compressed lung has been so far spoilt that full recovery is impossible. Thus its obscure origin and the importance of early relief combine to make the study of empyema in childhood a matter of great practical interest.

These several modes of origin are shown below as regards twenty consecutive cases, a number that may serve to illustrate the characteristic forms of the disease, though of course it is insufficient for any comparison as to relative frequency.

Modes of onset in twenty cases:

| | *e.g.* |
|---|---|
| Began insidiously, wasting, cough, night sweats, &c. 9 cases. | 3½ months' wasting; extremely emaciated (Case 1).<br>8 months ago began to lose flesh; no acute illness (Case 10).<br>3 months' wasting (Case 18). |
| | *e.g.* |
| Began probably with pneumonia, of which it is the late result. 7 cases. | 3 months ago had "congestion of lungs" (Case 11).<br>6 weeks ago shivered and coughed (Case 13).<br>5 weeks ago came home ill from school; vomited and was feverish (Case 16). |
| | *e.g.* |
| Began with measles or scarlatina. 4 cases. | 3½ months ago measles; perfectly well before (Case 19).<br>A year ago measles and whooping-cough. Illness dates from this (Case 20). |

There are varieties in the physical characters of empyema as well as in its origin. The empyema of the adult, which we regard, so to say, as a pleurisy gone wrong, often occupies the pleural cavity as a whole; that of the child is a localised and shut in collection of pus, which may be found in any situation and is not even confined to the pleura, but may involve the pericardium as well or instead. When of moderate size, as they often are, these pus collections, as I have said, cause no active symptoms, not even, as was once

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thought, giving rise in every instance to pyrexia. They have to be sought out by physical examination. And whenever the health of a child, especially a young child, is unsatisfactory, when it wastes or sweats at night or sleeps ill or wants appetite, then, even though there should be no direct signs of chest disease, the possibility of empyema should occur to the mind and its physical evidence should be sought for.

It is for want of that search and of the operation that would follow it that young children are brought to hospital from time to time with empyema of long standing. Emaciated sometimes to an extreme degree, with cough, dyspnœa, and night sweating, their condition nearly resembles advanced phthisis, for which it is too often mistaken. And, indeed, the resemblance is more than superficial. No one can overlook the near kindred between empyema and so-called bronchial phthisis. The enlargement, caseation, and ultimate softening of a bronchial gland affects the same age and is susceptible of the same natural cure by spontaneous rupture into a bronchus as empyema. It is only more fatal because it is more hid. The softened gland fares worse than the purulent pleura from the mere accident of position. It is difficult to discover and impossible to reach. Yet except for our help the case of the one is almost as bad as that of the other, and left to themselves both habitually end in death.

But empyema differs from bronchial phthisis in its accessibility, and it is upon this character that our modern practice is based. It may be thus expressed: whenever a child with impaired nutrition has a fixed spot of dulness over either lung, not in combination with other physical signs indicating phthisis, and at this place the breathing is distant or absent, exploration of that spot with a needle syringe is imperatively called for. And when, as the result of such exploration, fluid is withdrawn the next procedure is to remove the rest of it; the particular method varying somewhat in different cases according to the consistence of the fluid, the situation of the cavity, and, most of all perhaps, according to its size and age. Small collections, even though purulent, may sometimes be finally disposed of by one or by two aspirations; large ones seldom or never. These latter need free opening, tubage, and

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often, especially in cases of long standing, removal of a portion of rib.

It is true that exploration sometimes gives a negative result, and this for other reasons than that there is no fluid to remove. Thus false membrane may be pushed forward by the needle instead of being pierced by it: the pus may be too thick to run, or shreds of lymph may choke the passage; or in old cases the lung may be tightly bound down while the chest walls are unyielding, so that there is no force exerted to stir the fluid. Failure to obtain it is no proof either that it is not present or that the needle has not reached it. Not seldom, though the syringe remains empty, the operator can feel from the free movement of the inserted point, that the needle is in a cavity, while sometimes he will meet with such resistance in inserting it as to assure him of the existence of tough thickened false membrane, the result of long-standing empyema, and which will yield to nothing short of free incision and probably may need removal of rib besides.

The following table of cases displays the various methods by means of which we sought to cure empyema, and did as a fact cure it; although, as I have said the particular procedure adopted in individual cases may be open to criticism. The patients in many instances, it must be remembered, have been much reduced by long neglect of their malady, owing sometimes to ignorance of its presence and sometimes to a survival of the fear which made the old physicians hesitate so long before wounding the pleura, a by no means sensitive membrane, as we now know, that may be handled and pierced and cut and left exposed to the external air for months and for years and no permanent harm come of it.

Treatment in eighteen cases, and the time in hospital:—

| | | |
|---|---|---|
| I. Aspiration only . . | 3 | No. 6 (age 2·6). Small empyema. Pus 1 oz. 43 days.<br>No. 11 (age 3·2). Small empyema. Pus 3 oz. 54 days.<br>No. 5 (age 1). Small empyema. Pus 4 oz. 23 days. |
| II. Repeated aspiration . . | 2 | No. 3 (age 7·6). Small empyema. Side fell in after last aspiration. 68 days.<br>No. 9 (age 2·6). Delusive recovery twice. Some months. |

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| | | |
|---|---|---|
| III. Aspiration and early drainage . . . . . | 3 | No. 4 (age 4·6). Tube 19th day. 92 days.<br>No. 7 (age 3·4). Large bulging. Two tubes. 50 days.<br>No. 13 (age 5·5). Necrosis rib. 78 days. |
| IV. Aspiration and late drainage . . . . . | 3 | No. 2 (age 2·6). Three aspirations. 69 days.<br>No. 1 (age 4·9). Delusive recoveries. 45 days.<br>No. 8 (age 5·4). Two aspirations. Pus spat up. Tube on 20th day. 121 days. |
| V. Resection of rib . . | 3 | Cases 14 (age 5·6), 16 (age 5·2), and 17 (age 7·9). All large. All did well. No. 16 was double. |
| Exploration without result | 4 | No. 10 (age 9·5)<br>No. 12 (age 3)<br>No. 15 (age 5·6)<br>No. 18 (age 4·5)<br>No fluid withdrawn in any of the four. All went out improved in health except No. 15, who was repeatedly admitted, and who from shape of chest and description of expectoration had undoubtedly had empyema, although repeated exploration failed to discover pus. Like the case mentioned on p. 61 it probably escaped through the lung. |

Of the eighteen patients here classified four were repeatedly explored without result. Be the cause what it may (whether collapsed lung or else an old and obsolete empyema behind thickened pleura), it must be freely admitted that in young children, with the best care, these pus collections cannot always be diagnosed with certainty. The difficulty is greatest when the empyema is both small and old and the tough false membrane that covers it serves to convey the breath-sounds of the neighbouring lung tissue so distinctly that the sign of distant breathing on which we are wont to rely is wanting. If in addition (as often happens with children) no information is afforded by the voice resonance, we are left with but one physical indication, namely, dulness of percussion over a small area. Nevertheless, the rule of practice still holds, and this spot of dulness, supposing the health of the child to be in any way unsatisfactory, needs exploration and repeated exploration: and this failing, sometimes, as we shall presently see, even excision.

But while futile exploration, in itself harmless, may not always be avoided, care and deliberation in selecting the exact spot most suitable for puncture will reduce such failures to a minimum.

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It is important, especially with lean children who are chiefly the subjects of the disease, to begin by making careful inspection of the chest. Sometimes, even in a small empyema, it is possible by keen observation to detect over the seat of it a fulness or obliteration of intercostal space as compared with the other side and made more obvious by the respiratory movements. Similarly in percussion, it is important to ascertain *the precise point or centre of dulness*, the dullest point of the dull area, a point which will usually (not always) correspond with that of feeblest and most distant breathing and best indicate the exact place for the needle. It is often surprising to notice how these small pus collections just manage by a hair's breadth to escape puncture. A first exploration may yield nothing and a second close to it strike pus. But for the pain[1] these repeated punctures are not harmful unless they are reckless. In the case of large and obvious empyema no preliminary exploration is necessary.

An empyema once discovered has next to be emptied, and in the case of small collections, as in the three patients at the head of the above list, a single aspiration may suffice. It is even justifiable upon a re-collection of fluid to aspirate a second time, and a second time seal up the pleura without making free drainage. But any further delay than this, or any delay at all in making free drainage when the cavity is large or the patient's health is rapidly failing, is demonstrably bad practice. We live and learn, and those that are oldest know most of the bad treatment of empyema. Some of these eighteen cases speak for themselves and may serve as warnings. Repeated aspiration, as the event shows, is always wrong. The recovery is temporary and delusive (as in Case 9) and although the patient may eventually get cured, he is longer about it, and incurs more risk of degenerative change the while than when free drainage is established early.

Again, "Aspiration and late drainage" is confessedly wrong. Written in full it would run: aspiration failing, and drainage at last resorted to in consequence. The three ex-

[1] By a simple contrivance (made for me by Mr. Wright, of New Bond Street, the hospital instrument maker) the point of the exploring syringe may be withdrawn without removal of the instrument itself from the chest, and aspiration performed without a second puncture, a great gain with timid children.

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amples of this practice here shown are so many melancholy experiments with a view to determine the question whether an empyema of moderate size might not be finally disposed of by repeated aspiration without incising the chest. The answer is not doubtful. In the first case three aspirations had failed before drainage was resorted to. In the second apparent recovery after aspiration proved delusive on two occasions. In the third, after a second aspiration, nature herself gave the necessary warning. Some pus having been expectorated, a drainage tube was introduced on the twentieth day and the child made a good but slow recovery.[1]

Rib resection is illustrated by three cases, all of them severe and one double. I have said already that the whole treatment of empyema is summed up in securing and maintaining a free vent for pus. If this simple precept had been fully carried out and applied alike to flesh and bone, we should have reached long ago this simple operation of removing an obstructive rib. As a matter of fact it is only of late years that it has been largely adopted, and by its aid patients who have suffered empyema for months and for years (as I could quote from my own practice) have been rapidly cured.

The rule, then, generally stated, is this: empyema must be emptied and got rid of. If small and recent a single aspiration or two aspirations may suffice, and in dispensing with drainage you may save both time and trouble. But you cannot afford to wait; it is better to be too early than too late in commencing to drain, and when the ribs approximate so as to pinch the tube, as in old cases they mostly do, a part of one must be removed. This enforced, counter openings, necrosis of an exposed and pressed rib, burrowing sinuses, and a host of troubles are in large measure avoided.

Space is wanting for any full record of the striking success of treatment when based upon these principles. Yet a short abstract taken from one of the cases just cited (No. 16) will go some way to justify what is here said.

[1] Expectoration of pus through the mouth, though it may be taken as a hint that our treatment is too tardy, occurs sometimes in children with remarkably little disturbance, serving of itself to evacuate the empyema without signs of pneumothorax or other untoward event.

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Robert S—, æt. 5 years and 2 months, was admitted with double empyema. He was emaciated and feverish, with drying tongue and night sweats like one in advanced phthisis. The pleural collections were dealt with in succession. That is to say, after aspiration of the left side had removed an ounce of thick curdy pus, the flakes of which soon blocked the aspirator, incision was made over the ninth rib and a part of it resected, when a large pus-filled cavity was disclosed which the finger could not fathom. Almost as soon as the tube had been introduced and free drainage was established the patient's worst symptoms disappeared and he gained two pounds in weight in nine days. In about three weeks, drainage of right pleura being still in progress, the left side was aspirated and two and a half drachms of pus were withdrawn. Three weeks later, the right empyema having ceased to discharge and its wound having healed, the left rib was resected and drainage was established on that side. It was not until this second empyema was released that night pyrexia disappeared, though the boy's general improvement dated from the first operation. In short, after three months' residence both wounds had healed; the child was fat and well and air entered both lungs freely.

As has been said, old empyema is not always removable, or, to speak accurately, even movable by means of aspiration. To discover pus nothing short of free and bold incision followed by resection of rib will suffice. This condition applies to many cases of long standing that have been timidly dealt with from time to time. When the pleura is reached it is found to be dense and tough, and on incision thick and sometimes fœtid pus will be freely discharged, to the manifest relief of the patient. Thus a child of seven (not one of my present list) was tapped and apparently relieved of empyema and discharged as recovered. But when at home it was found that he still coughed, and soon that the sputum was highly fœtid. On his return to hospital, much worse than before, it was only by removing an inch of the seventh rib in the axillary line and carefully opening a much thickened pleura that pus was reached, of which six or eight ounces escaped, while the finger detected a quantity of flaky lymph.

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Even free incision will sometimes fail to remove pus from an old empyema cavity whose contents have been already partly discharged by way of the lung. A boy aged two years and nine months was admitted to hospital in the present year after a month of wasting, sickness, and cough, during which time, as was reported, a large quantity of thick matter had been spat up. The physical signs seemed to indicate an empyema of some size, and a few drachms of thick pus were twice withdrawn from a point immediately below the angle of the left scapula. But on making a two-inch incision over the eighth rib nearer to the axillary line than this point (for convenience of draining), removing an inch of rib, and incising the thickened pleura, no pus appeared. A tenotomy knife was then passed through the wound upwards and backwards in the direction of the site of first puncture, passing through half an inch of solid tissue; yet still no pus. Aspiration was then tried in the seventh space a little above and behind the posterior end of the wound, close, that is, to the site of the first exploratory puncture, when an ounce of pus was withdrawn. With no further interference the boy made a rapid recovery.

The free incision unsuccessfully made in this case (and which very quickly healed) was founded on the belief that the empyema (which gave extensive dulness and had notably displaced the heart) was a large one; the axillary region was chosen rather than the back (where the first puncture was made) as being the most convenient. But the event seemed to show that though the cavity was orginally large it held but little, and this probably loculated pus; the rest having been removed through the lung. The physical signs were so far misleading; and had aspiration followed the exploration at the same spot the rest might have been spared.

We have to admit, then, that our means of ascertaining the precise size, contents, locality, and investment of an empyema are somewhat defective. Exploration is sometimes fruitless, incision may be made when aspiration would suffice, and rib resection may be practised by routine. But these are comparatively small matters, for while it would be difficult even with a large experience to quote a single example of real harm

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due to superfluous interference or over activity in treatment, we are continually reminded of the serious and even fatal consequences of letting empyema alone.

And this leads me to speak of my fatal cases. Having three such to report, the statement that empyema taken in time can always be cured may seem too confident. Yet in fact it is nothing else than this that these fatal cases teach. They are examples of empyema left till too late and convey precisely the same lesson as those I have already quoted from the post-mortem books. Thus one (No. 19) was an infant of fourteen months, admitted with air as well as pus in the pleura. The child was much relieved by drainage but died eventually, and as examination showed was tubercular. The second (No. 20), also an infant of eleven months, had tough fibroid lung and two old lung cavities opening into the pleura; besides, there was some grey tubercle. The third (No. 21), a girl of three years and three months, had pneumothorax, of which the physical signs became obvious a few days after admission. Whatever might have been done for these children had reference to an earlier time than that of their first coming under observation.

Yet there remains one point of view in which I may have spoken too hopefully, or rather too unreservedly, of what may be done to save the lives of children suffering from empyema. There is pericardial empyema as well as pleural; and it is very insidious, very dangerous, and most often undiscovered except at the post-mortem table. We have seen already that it is by physical examination, and in no other way whatever, that we ascertain the presence of pus within the pleura, but pericardial empyema often has no physical signs. Beginning in the same indefinite way as the other, yet with none of the symptoms, physical or otherwise, of pericarditis, it ends in a small collection of pus within the pericardium far too scanty to distend it, and in my belief, and certainly in my practice, not commonly recognised in life. Even when pus is more abundant it is no easy matter to distinguish a pericardial from a pleural empyema, and I recall a keen self-reproach, not altogether dead after a lapse of years, in discovering after death that what I had mistaken for this latter and vainly endeavoured to reach and remove

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was in fact a purulent collection within the pericardium which no needle of mine had ever penetrated.

It is to be feared that we shall never succeed in making the cure of empyema a short process. The mischief is long a doing and must be long in mending, while the event which often helps and hastens the cure, the falling in of the chest, unfortunately at the same time somewhat deforms the child. Yet it is to be remembered that it is old empyema that takes the longest time to heal and gives the most trouble; and old empyema is in fact a reproach which, with our present light, ought to be done away. It is to be remembered also that although the process is long, counting from the first introduction of the tube to the time when the wound made for it has closed and cicatrised, yet that the amendment that follows the free release of imprisoned pus is almost immediate. I know of nothing to compare with the transformation that takes place in the emaciated, hectic child, the victim of empyema, so soon as the source of its suffering is once reached and removed. It is the more striking because it brings to mind many a picture of the precisely similar suffering of pulmonary phthisis which we are quite powerless to relieve.

Of the treatment of empyema, other than the mechanical, I need say nothing. It may seem remarkable that blisters or iodine paint should be applied to the skin in the supposed vicinity of these purulent collections, shut in as they often are by tough fibroid walls that the knife barely penetrates, with some notion that they may possibly be affected thereby; but it is not altogether an obsolete practice. And so of wine and tonics. The best tonic and the one to which, as we have seen, the patient immediately responds, is the operation that removes the cause of offence. In many instances no other is needed. Even should the child show pyrexia or be sick or in any way halt in its recovery, the reason will probably be found in some defect of drainage which the surgeon can best remedy. Symptoms of course may arise now and again calling for stimulation, for cod liver oil and even for drugs, but so far as I know there is nothing special in such indications; and just as there is no disease whatever so plainly dependent on a removable cause, so is there none that so obviously recovers spontaneously when removal is accomplished.

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# CHEMISTRY AND MEDICINE

## THE FOLLOWING OF PARACELSUS.*

By Dr. H. WILSON HAKE.

There is one particular period in the history of Chemistry which should have a special interest for the medical student: I refer to the period known as the age of Iatro-Chemistry, or Medical Chemistry, which had its beginning in the second quarter of the sixteenth century. A consideration of the history of this period cannot fail to be interesting, and it will give me the opportunity of placing before you subsequently a few remarks relating to the study of Chemistry in the present day with reference to the requirements and aims of the medical student, and thus to supplement the remarks which I contributed to Volume III of these Reports. If we look back at the history of Chemistry, it becomes evident that Chemical Science owes much of its advancement, in the earlier stages of its career, to medical men; but in order that you may fully realise the immense assistance which was afforded to Chemistry by the attention it received at the hands of physicians during the three last quarters of the sixteenth, and the first half of the seventeenth century, I must ask you to accompany me in a brief retrospect which has its beginning in the dark ages.

It has been truly said of Chemistry that it is a very young science but a most ancient branch of knowledge. In times

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almost pre-historic we find that the wants of man compelled an acquaintance with chemical facts, so we learn that among the most ancient nations, the Egyptians and Phœnicians, for example, there existed a practical knowledge of the production of certain metals from their ores, of the selection and use of natural pigments, of the manufacture of pottery and glass, of the employment of antiseptics to prevent the putrefaction of dead bodies, and a certain acquaintance with drugs.

But beyond this mere perception of what we may now regard as a few isolated facts there was no attempt at collecting these or at viewing them as belonging to one and the same branch of knowledge.

Doubtless, the Israelites obtained their chemical knowledge from the Egyptians, hence their familiarity with many metallurgical operations relating to gold, silver, copper, tin, lead, and iron. Among the Greeks in the time of Homer, about 1000 B.C., it would appear that chemical knowledge had not advanced any farther than what has been above mentioned as being known to the Egyptians; a later tendency of the Greek nation towards the study of abstract philosophy stood in the way of an experimental science, and except, perhaps, Hippocrates and Democritus (about 500 B.C.) we cannot point at this time to any great names associated with the development of chemical facts.

Later on Aristotle (384–322 B.C.) may be said to have dabbled in Chemistry, but although his genius is indisputable, he was, in one sense, the evil genius of chemical science: for his great philosophical dictum, that all matter was composed of the four elements, earth, air, fire and water, befogged the minds of men for nearly twenty centuries—an instance of the truth of Shakepeare's saying that "The evil which men do lives after them, the good is oft interred with their bones." The mental influence of Aristotle still remains in one word—"quintessence"—derived from his fifth fundamental property of matter, the *essentia quinta*. From the Greeks chemical knowledge was imparted to their Roman conquerors, and under these people made considerable advances. To a Greek, Discorides, who lived in the first century, we owe, I believe, the first work on Materia

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Medica (περι ὕλης ἰατρικης), and in this work we first hear of the process of distillation; to a Roman, Pliny the elder (born A.D. 23), we are indebted for an account of the chemical knowledge of his period, which is contained in his famous work on Natural History. In this century mercury first finds mention as a chemical substance, and we hear of soap and of vinegar, and of the bleaching of wool by the fumes of burning sulphur. Between the first and the fourth century the only great name we come across in connection with my subject is that of Galen, the physician (born A.D. 121), who, following up the dictum of Aristotle, asserted that health or disease must depend upon the relative proportions of the four elements in the body, and should this be too hot or too cold, too moist or too dry, the normal condition must be restored by the administration of medicine.

From the first to the middle of the fourth century there is little recorded; at the end of this period, however, it is clear that chemical knowledge had in some sense become a science, but that its ultimate aims were delusive and but the vain pursuit of shadows, such as the discovery of the philosopher's stone, the elixir of life, and the conversion of the base metals into gold and silver. These wild dreams occupied the minds of many learned men from the fourth far into the sixteenth century, and it is therefore not surprising that, although the object in view was false and unattainable, the present science of Chemistry owes many discoveries to this period—the period of Alchemy.

The origin of these extraordinary tendencies in Chemistry is involved in much doubt; they most probably arose out of the gradual divulgence of the so-called mysteries of the Egyptian priests; owing to the increasing diffusion of knowledge, by the developing importance of the University of Alexandria, established by Ptolemy 300 B.C. After the conquest of Egypt by the Arabians (A.D. 642) this knowledge passed to the conquerors, and among them the art of Alchemy flourished and was communicated by them to the Western world. It has been incorrectly asserted that Alchemy had its origin with the Arabians themselves, but the fact of their burning the great library at Alexandria is put forward as an argument against this supposition, since they would scarcely

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have destroyed it if they had been able to appreciate the value of its contents.

It is impossible for me in the brief time at my disposal, nor would it be in accordance with my purpose, to enter into any detail with respect to this highly interesting and in certain aspects most melancholy period of chemical history. Suffice it to say that among the great names that meet us, there are, in the eighth century, Geber and Avicenna; in the thirteenth century, Albertus Magnus (1193–1280); Raymond Lulli (1235–1315); and Roger Bacon (1214–1293); and in the fifteenth century Basilius Valentinus.

The first two were physicians, but they were all alchemists, in the strict sense of the word. To all of them we owe very remarkable discoveries, and to Basilius Valentinus the discovery of antimony and many of its preparations.

The gradual spread of education largely contributed to bring about another change in the tendency of Chemistry. In the year 1300 the University of Oxford was founded; in the year 1346 the first University of Germany, that of Heidelberg, was instituted; and in 1436 the invention of printing gave a mental impetus to the world. This brings me to the special period to which I alluded at the commencement of my address.

It may almost be said that the remarkable change which took place in the tendency of Chemistry at the beginning of the sixteenth century was due to the strong individuality and powerful brain of one man, the physician Paracelsus.

He it was who turned the current of this mighty stream and delivered Chemistry out of the hands of the alchemists into those of the physicians, a class of men who then, as now, were among the most cultivated and refined of their time.

A brief sketch of the life and labours of this great man will be, I think, especially appropriate to my subject and not uninteresting to my audience.

Paracelsus, or to give his name in full, Phillippus Aureolus Theophrastus Paracelsus Bombastes von Hohenheim, was born in 1493 at Einsiedeln, in Switzerland; his father, who was briefly named Wilhelm Bombast, was a physician in Einsiedeln, and early instructed his son in the art of healing, in Alchemy, and Astrology.

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Paracelsus became a university student, and as was the fashion then, and is still to some extent, in Germany, travelled in many lands and sat at the feet of many great masters. In his travels he did not disdain to cast nativities, to foretell the future by the stars, and even on occasions to invoke spirits. According to his own statement, he had studied in French, German, and Italian universities and had visited Egypt and the East, Hungary, Sweden, Belgium, Portugal, and Spain. After these wanderings he returned, at the age of thirty, to Germany. "A rolling stone," it is said, "gathers no moss," and it appears, from the opinion of his contemporaries, that he had rather profited by practical experience than imbibed the solid information of the schools. Some even deny him the title of Doctor; but he was a man who, being possessed with a certain happy vanity, and callous to the opinion of his contemporaries, made up for all his deficiencies by blowing his own trumpet.

He certainly had travelled in lands where mining operations were carried on, and had come into intimate personal contact with many distinguished physicians and alchemists of his time, and by a great boldness (not altogether unknown at the present day) in the experimental administration of new medicines, had achieved some remarkable cures.

His fame had so extended that, in 1526, he was elected Professor of Natural History and Medicine at the University of Bâle, a distinction which he enjoyed for one brief twelvemonth.

The fame of Paracelsus was far more extended among the cultivated classes than among the schoolmen of that age. He upset a recognised custom by lecturing in the German language instead of in Latin, which circumstance alone gave him a much larger audience. He had also the reputation of having been one of the most fascinating of popular lecturers. He obtained great notoriety by publicly burning, during one of his discourses, the works of Galen and Avicenna, hitherto two undisputed authorities, declaring at the same time that there was more learning in his shoe-laces than in the whole of the writings of those two men. Owing to his immense popularity, and a certain tendency to inebriety which history has not failed to record, he got into trouble, and was obliged to leave Bâle in 1527.

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During the next few years he travelled through various parts of Germany, his fame as a physician accompanying him, and in 1531 returned to his native country, Switzerland. In 1536 he was in Bohemia, from Bohemia he may be traced to Vienna, and from Vienna to Salzburg, where he died, apparently in reduced circumstances.

Notwithstanding his restless life, Paracelsus was the author of numerous works, which he dictated to the students who followed him in his journeys.

Although these works are full of mysterious statements, there is so much in them which is original, and such bold speculation, much of which proved afterwards to be correct, that it is only to be regretted so talented a man should have had such serious failings as those of overweening vanity and inebriety and that his education had not been stricter.

Yet who can judge of these things? Imperfect as he was, he more than fulfilled Lord Beaconsfield's definition of genius, inasmuch as he not only influenced the minds of his own generation but those of many succeeding ones. In practical chemistry Paracelsus was apparently acquainted with all known metallurgical operations and instituted many new ones. He went beyond the hitherto accepted classification of metals into noble and ignoble by showing that ductility was a characteristic of many of them, and its opposite, brittleness, was peculiar to some, such as zinc and bismuth.

These he called bastards of the metals, and he was the first to observe many of the special properties of zinc. He showed how it was possible to amalgamate copper with mercury by first precipitating it from its solutions by iron. He abuses the alchemists roundly, and holds them up to contempt as fools, but, in one of his writings, he rather suggests that he knows how to make the philosopher's stone. His great and lasting service to science was his application of chemistry to medicine and his boldly expressed views with regard to the relations which existed between them. He openly declared that the object of chemistry was not to make gold but to make medicine, and he was the first to assert that the phenomenon of life was a chemical process. He introduced innumerable new medicines, many of which he prepared for the first time.

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Among his introductions he employed mercury in various forms, lead, antimony, milk of sulphur, sulphate of copper, even sulphuric acid and arsenic. He had the insight to see and to state boldly that the most dangerous poisons, when used in proper quantity, might be of the utmost value in medicine. Instead of using the whole plant, he aimed at discovering the active principle or quintessence of a drug. Many of his tinctures, essences, and extracts replaced the decoctions and juices of his predecessors.

These are a few of his many original observations. His theoretical views were full of the mysterious phraseology of the day, and he assumed the presence of a salt, sulphur, and quicksilver—meaning an indestructible, a combustible, and a fluid component—in every substance. He suggested the name Tartar or Tartarus for acid tartrate of potassium, because he said "this substance contains the water, the salt, the oil, and the acid which burns the patient as hell does." I may finally mention that he considered chemistry one of the four pillars of medicine.

The above is but a meagre account of the labours of this remarkable man, but enough has been said to indicate that he was the founder of a new school of thought.

It is not surprising to learn that, profiting by his great example, many physicians turned their attention to Chemistry until the immense record of discoveries raised this branch of learning to an independent science, a fact first announced to the world by Robert Boyle (1627—1691). Boyle upset Aristotle's four elements and the salt, sulphur, and quicksilver of the alchemists, and showed what the true nature of a chemical element was.

So the science of Chemistry, turned from its evil courses by Paracelsus, and rendered an independent branch of knowledge by Boyle, was finally raised by Lavoisier to its present pinnacle by the introduction of the balance into chemical research.

I have hurried over these latter periods because my object has been not to weary you with a tedious *résumé* of the history of chemical science, but rather to emphasise that period which originated with the genius of the physician Paracelsus.

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We see that the history of Chemistry divides itself into five periods, namely: (1) Ancient History, (2) the age of Alchemy, (3) the age of Medical Chemistry, (4) the age of Qualitative Chemistry, inaugurated by Boyle, and (5) and finally, the age of Quantitative Chemistry, commencing with Lavoisier.

It is thus clear that the age of medical Chemistry forms the keystone of that great arch upon which the vast superstructure of Chemical Science securely rests, and on that keystone is indelibly engraved the name of Paracelsus.

Strictly speaking, Chemistry and Medicine have never really parted since they first joined hands; but of late years the requirements of medical students have largely increased, and the exacting demands of stern examinations have tended to bring about the neglect of a science which Paracelsus, three hundred years ago, clearly foresaw was the handmaid and helpmate of medicine. It has been whispered by a select few, but never, I think, very boldly upheld, that since medical students have so much to do and so little time to do it in, Chemistry had better be banished from their curriculum. Not many years ago a great examining board, including many of the leading medical men of the day, passed a resolution by which it was enacted that the attendance of medical students at chemical lectures should no longer be compulsory, and this same board came to the conclusion that out of the twenty-four common metals of everyday use, it was not necessary for the student to be practically acquainted with the reactions of tin, cadmium, chromium, manganese, nickel, cobalt, and strontium, or their compounds.

It was even suggested in certain quarters—I make no allusion whatever to this medical school—that chemical lectureships at medical schools should be abolished, and the unfortunate medical student might learn his chemistry when, where, and how he could.

During this same recent period the universities have not followed suit in this direction, and Cambridge, perhaps the leading representative of medical science, has intensified the severity of its chemical requirements for students in medicine.

What this divergence of opinion among medical men on a subject of such real importance means, I leave it for others

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to determine: one thing is certain, that the attendance at chemical lectures in medical schools has not decreased to any very appreciable extent, and I have heard it expressed on the part of many medical men that the non-compulsory attendance of medical students at chemical lectures was much to be regretted.

I believe I am the first lecturer on Chemistry to a medical school who has raised his voice, in solemn and indignant protest, against this latest phase or fashion in medicine. I never, at any time, seriously believed that it had any strong hold on the minds of the majority of medical men, who, without flattery, belong to the enlightened classes; but still, the opinion has had, and may continue to have, its brief day, and I hold it a duty to myself and to others engaged in the teaching of Chemistry, to combat it on every occasion, and with every argument which it is in my power to make use of. It seems almost trivial to speak of separating Chemistry and Medicine, when chemical reactions underlie, even if they do not control, life itself, whether in health or disease. Paracelsus thought so three hundred years ago.

Physiology without Chemistry would be very much like the play of Hamlet with the Prince of Denmark left out of it.

Medicine without drugs would not effect many cures, but who shall study Materia Medica without a knowledge of Chemistry? Even as it is, the pharmacist not unfrequently knows more Chemistry than the medical man, and sometimes very kindly corrects his prescriptions without publishing his errors to the world.

Moreover, as a study among the many sciences which a medical student has at present to pursue, Chemistry is almost the only inductive science, and therefore serves, like mathematics, as a logical training for the mind. How is medicine to advance as a science, and become something more than the art of healing based on empirical methods, unless it be through the development of therapeutics and physiology? and how again are these sciences to advance without the aid of Chemistry? What shall we say about the modern science of "Sanitation"? Shall toxicology be delivered absolutely into the hands of the chemists? Has Chemistry or Medicine saved most lives?

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I do not go to the opposite extreme and say that medical students should be exhaustively trained in Chemistry, that they should in fact become chemists; but a man may make the greatest use of a science without being a specialist, just as he is compelled to employ mathematics without necessarily being a skilled mathematician. If reform is necessary in the division of labour, let either the time of study be extended or let it be enacted that Elementary Chemistry be included as a compulsory subject in all preliminary examinations previous to registration.

In either case, but especially if the latter plan were adopted, a medical student would have the chance of learning more than the mere groundwork of chemical science, he would be enabled later on to appreciate properly the higher study of Organic Chemistry, and after qualification as a practitioner would be in a position, more or less according to his ability and disposition, to encourage by his attention, or even assist personally, in the many chemical developments which are slowly, but all too slowly, being carried on in medical science.

I have been reading in a recent number of the 'British Medical Journal' the first of the Croonian Lectures delivered by Dr. Lauder Brunton at the Royal College of Physicians, and I ask myself the question, How many among his audience were able to follow him in the chemical portion of his learned discourse? I may be wrong, but I cannot think that there were very many. And yet, I suppose, it will not be denied that Lauder Brunton is regarded by the majority of medical men as a leader and a pioneer.

I confess I fail to see why the generality of medical students should not learn sufficient Chemistry to apppreciate such grand efforts as are indicated in this Croonian Lecture.

The advance that such an appreciation would mean must come from the side of medical men themselves, and it is for this reason that I hail with especial pleasure the opportunity of addressing you to-night. We are frequently reminded that great events spring from little causes, and without wishing to make odious comparisons, I am desirous to point out to you that, if my arguments have had any weight with you, the future power to extend them to their logical issue lies in your hands.

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But much as you may assist in the aims of medicine in the future, so to a certain extent you have been to blame in the past. I have asked myself a great many questions during the writing of this paper, and I will repeat one here:—I ask myself, and I reply in an emphatic negative, Do all first year's men make full use of their opportunities?

During the last five years I have been struck with a certain class of student who seems to belong almost to a type. He cannot be said to be idle, for he attends lectures regularly; he cannot be said to be obnoxious, for he never interrupts a lecture; on the other hand, he never suggests the slightest pretence of listening, never makes a note, and departs as wise or as ignorant as when he came. Such a man would, in a sense, be better employed seated in an arm-chair smoking a cigarette and reading a novel, for under these circumstances he would be doing something that interested him and would thus be enlarging his ideas.

I hold the opinion that it is the first duty of a student to extract as much knowledge from his teacher as that individual is capable of imparting to him; a man need not be a book-worm, but he ought to make the full use of his opportunities for learning.

I would remind these loiterers on the threshold of knowledge of that great saying of the wisest of men, "Whatsoever thy hand findeth to do, do it with thy might;" and there is another maxim which my old teacher, Professor Will, of Giessen, was very fond of repeating—That a man need never be ashamed of being ignorant, but he need be ashamed of not being desirous to profit by information which is ready to hand.

These remarks need have no special application to Chemistry alone, but I am quite sure that if students profited to the full by the excellent chemical teaching which is to be found in the various London Medical Schools, then, even under the present regulations, the average chemical knowledge among medical men would be higher than it is at present and Chemistry itself would occupy a better position in medicine.

I look forward to a medical school of the future, where the practical laboratory will be as much visited as the dissecting room and no longer considered as merely a place to

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prepare for a minor examination, or as some may regard it —a legitimate battle-ground for wash-bottle duels. Not that I, myself, have the least cause for complaint, for I think I may congratulate my students on the excellent use they have made of their time during this and former summer sessions.

I believe very much in taking notes. There are some who do not hold this view, but I entirely disagree with them. The art of taking notes requires practice and is not easily learnt. When once learnt it is of the greatest advantage to the student, since it assists his memory, facilitates his power of expression, gives clearness to his ideas, and accuracy to his statements. The student who is capable of making a thoroughly good series of notes on any subject need fear no examination.

The cause of apathy towards the study of Chemistry is not far to seek. I have been told, not so much by medical students as by medical men, that chemistry is dry and uninteresting, and, from their point of view, I will not attempt to deny the imputation, but the reason of this opinion is, to my mind, a very simple and obvious one. It lies in what I may call the hereditary contempt for chemical science, which possibly had its origin in the times when Medicine and Chemistry became more and more separated after the days of Paracelsus, and when Chemistry in its earlier days as a pure science, and even within comparatively recent times, presented to the uninitiated a confused and chaotic mass of contradictory theories, each apparently more absurd than its predecessor. But the chemists can now say with the physician in Molière's famous play, "nous avons changé tout cela."

Chemical theory has reached a development which in many directions is impregnable, and to attempt to appreciate chemistry without at the same time realising the force of chemical theory, is to learn a series of facts which, having no apparent connection and in no way appealing to the scientific imagination, are correctly described as dry and uninteresting.

To use a medical metaphor, theory stands in the same relation to mere chemical facts as physiology to anatomy.

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In a word, the neglect of theory by medical students, and the objection which sometimes prevails to being taught anything which is not in the syllabus, has brought this infliction upon themselves. It is sometimes difficult to persuade a student to learn the very symbols of chemistry, and a chemical equation in such a case becomes to him an equation of innumerable unknowns.

Let me take advantage of my privileged position this evening to advise those who are studying Chemistry to seize upon chemical theory with avidity and to make it a part of themselves. Then chemical facts, seen with the eyes of reason, become clothed in brilliant colours; organic chemistry—which is all theory—a paradise, among whose paths it is a delight to wander; and the answering of examination questions a fascinating and gentle exercise of the mind.

In conclusion, I believe that history will repeat itself, and that chemistry will, ere long, be once more indebted to medical men for its development; with this difference, that the advance must be in the direction of physiological chemistry, and that chemical science, in once more acknowledging a debt of gratitude to medicine, will, by its reciprocal action in advancing medical science, repay its former debt a thousandfold.

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# THE MEDICAL SELECTION OF LIVES FOR ASSURANCE.*

By Dr. DE HAVILLAND HALL.

## I.

For a due understanding of the principles of life assurance it is necessary to consider how it comes to pass that the careful selection of lives plays such an important rôle in the prosperity of an office. Mr. Farren† has shown that the rates of mortality of persons assured "would not particularly differ from those prevailing among the male population at large, taken indiscriminately without regard to health." This is equivalent to say that if you were to take the first hundred male adults passing over Westminster Bridge you might with safety accept them all as first-class lives. Whence comes it to pass, then, that such an elaborate system of medical examination is required, in order that assurance companies may only undertake risks which they will be able to meet in the future? A little consideration will soon enable the inquirer to arrive at some of the reasons for this

* The substance of lectures delivered in the course of Forensic Medicine and Hygiene at the Westminster Hospital.

† Quoted by Walford, 'Insurance Guide,' p. 225.

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apparent anomaly. To begin with, the class of people who naturally avail themselves most readily of the advantages of life assurance is that in which the income of the individual depends chiefly or entirely on his own exertions. This includes all professional men, most of those engaged in commercial pursuits, and extends to the superior artisans: with labourers life assurance has little to do. Now it will at once be seen that the majority of the above-mentioned must of necessity carry on their avocations under conditions more or less inimical to longevity. The harass and worry of professional life, often combined with the hope deferred which maketh the heart sick, the insanitary chambers and counting houses, hurried meals, and want of sufficient exercise in a pure air, all tend to impair a constitution even naturally vigorous. Then, again, there can be no sort of doubt that selection is against the companies; that is to say, a man is much more prone to take steps to get his life assured if he has a suspicion, however vague and intangible, that he is not so robust as he could wish; whereas the man in the enjoyment of a healthy, vigorous existence is disposed to undervalue the prudence of assurance; and, lastly, even when the assurance has been effected there is always the risk of the healthy lives allowing their policies to lapse, whereas the delicate lives make the most desperate exertions to hold on, and are determined to get the pound of flesh for their families. But even with the most careful medical inspection all that can be done is to prevent the selection against the company being too marked in the early years after assurance. Mr. Morgan,* a former actuary at the Equitable, thus expresses himself: "Between a number of select lives and the general mankind the difference in the rate of mortality will, *at first, be considerably in favour of the former;* but this difference will be continually lessening, till, *in process of time, it will vanish altogether.*" Assurance experience shows that a careful selection does cause a marked diminution in the mortality during the first seven to ten years after assurance, but that after this period the mortality of the assured does not differ materially from that of the general population. A curious feature in life

* Walford's 'Insurance Guide,' p. 224.

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assurance is the fact that, among the assured, the wonderful ages attained by members of tontine societies, and annuitants is nowhere approached. In my office, the Rock, the oldest life was ninety-four, and the Royal Exchange heads the list with a life of ninety-six, whereas there are many instances of annuitants and members of tontine societies living upwards of 100 years, and yet they must have been taken from a much smaller class than that of the assured. One more point, which suggests much matter for serious consideration, is the reversal in assurance statistics of what obtains among the general population as regards the respective expectancy of male and female lives. Speaking generally, the female life has the advantage of the male, but when we come to deal with the lives of the assured, the female lives show more unfavorably than the male. One explanation undoubtedly is, that the examination of female candidates for assurance cannot be carried out with the same thoroughness as in men, but I am afraid that this is not the whole truth, and that there is more in the matter than at first strikes the eye.

The anonymous author of 'L'Examen Médical dans les Assurances sur la vie' reports two interesting examples of the need of shrewdness on the part of the examiner in dealing with applicants for assurance. In one case the physician went to examine a sculptor at his studio. A long examination of his antecedents and of his person revealed nothing unfavorable, and he was about to recommend the acceptance of the proposal, when, by chance, he espied on a bookcase a series of books on diabetes and its treatment. This kind of literature, so little in keeping with the tastes and work of their possessor, awoke the suspicion of the doctor, who deemed it necessary to examine the urine (a procedure not generally adopted at that time) and there discovered the chemical indications of the disease which, not without reason, had been the object of the scientific studies of the artist. A somewhat similar story is recorded of M. Sireday. A candidate of good appearance presented himself for assurance. The doctor requested some urine of the gentleman, who regretted that he had passed water before he came in. M. Siredey made an appointment with the candi-



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date who brought some urine in a bottle quite cold. The doctor replied that he only examined urine when hot. Whereupon there were fresh excuses on the part of the candidate taken unawares. "Very well," said Siredey, "we can chat until you feel inclined to pass water." Tired out, the candidate complied. He was a diabetic.

The position of physician to the Rock Life Assurance Company has afforded me an opportunity of seeing the desirability of some systematic instruction in the method of examining for life assurance. As physician to the company I have not only to examine the candidates for assurance who present themselves at the head office, but I have also to supervise the reports of the country examiners, and advise the Board of Directors thereon. I have been much struck by the want of care shown by some of the examiners, *e. g.* important questions are left unanswered, or answered in such a dubious manner that it is difficult to arrive at the meaning; frequently there is no note as to the condition of the urine, and occasionally the report is sent in by the examiner unsigned. Medical men should bear in mind that in none of their duties are care and judgment more important than in life assurance. To his hands is the balance committed, and he should exercise all due precaution in order to prevent the scale being unfairly loaded in one direction or the other. I think that I am quite justified in stating that if the medical examiner had realised the importance of his position, more than half the disputed claims which have been brought into the law courts would never have been heard of. When a company takes upon itself the unpleasant task of resisting the payment of a policy, it is usually on the ground that material facts were concealed at the time the policy was taken out. The medical examiner should remember that it is better for the candidate that all the facts within his knowledge bearing on the health of the candidate should be frankly stated, and then, if the company choose to take the risk, there can be no dispute in the future. Though at first sight it may seem a very easy thing to examine a candidate for assurance, and then to write a report on his case, only those to whom it falls to examine the reports of the medical examiners can realise the many difficulties which arise in endea-

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vouring to take an equitable view of the facts recorded in these reports.

In giving you some practical advice on the method of examining lives for assurance, as the result of the experience I have acquired during the last nine years at the Rock Life Office, I do not think that I can do better than take the examination form prescribed by that company as the basis for my remarks. But before doing so I wish to direct your attention to two points. In the first place, when you are called upon to examine a life for assurance you should carefully fill in the answers to *all* the questions contained in the printed form issued by the assurance company. Some of the questions may possibly seem to you hardly to bear on the case under examination, but in order to allow the directors to arrive at a definite conclusion it is necessary that they should have all the information they ask for. In the form issued by the Rock Life Assurance Company, though, compared with many others, it is a very concise one, nevertheless it is most difficult to get an answer to all the questions. Sometimes the blank for the answer is not filled in at all, at other times the answer is so imperfect or vague that further inquiry is necessary. In no part of the report is this more conspicuous than in that devoted to family history. The only other caution I shall now give you is that you should carefully weigh your words in drawing up the recommendation which concludes your report on the life. Many examiners seem to write as though they thought that because their reports have to go before the physician at the head office, it is not necessary for them to take much trouble in summing up the evidence for and against the candidate. Then, again, the recommendation seems sometimes to be against the facts recorded. It is quite possible that the examiner may have good grounds for the advice he gives, but in that case he should put in black and white, so far as he can, the reasons which have influenced him. And, lastly, in recommending any life with an addition, remember the expectation of the individual; the additions recommended are sometimes absurdly out of proportion with the risks incurred. In every life under consideration you should try to bear in mind, "How should I like to have one hundred such

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lives?" The very essence of life assurance consists in the average attained by those assured; so do not be induced, simply because the amount to be assured is a small one, to recommend a life which you would not advise to be taken for, say, £1000.

I will now take the Report of the Rock Office* and discuss the questions therein contained *seriatim*.

In paragraph 1 are recorded the name, occupation, and age of the applicant. As regards the occupation, I think that, as a rule, too little stress is laid on the subject, but a few figures will enable you at a glance to realise the importance of paying attention to the calling in life of the applicant.

"The four classes which, on the whole, experience the heaviest rates of mortality in this kingdom are miners, bakers, butchers, and inn and beershop keepers."†

| | |
|---|---|
| At the age of 45 to 55 the average death-rate in 1000 is | 18 |
| In farmers | 12 |
| In shoemakers, weavers, and others employed in the manufacture of cotton, silk, and wool | 15 |
| In blacksmiths, carpenters, tailors, and labourers | 17 |
| In miners | 20 |
| In bakers | 21 |
| In butchers | 23 |
| In inn and beershop keepers | 28 |

The supplement to the Thirty-fifth Annual Report of the Registrar-General contains much valuable matter for the assurance physician, and the following extracts will be useful in estimating the relative mortality of some of the most important occupations:

"At all ages after 25 the mortality of London butchers is excessive; it is beyond, not only the mortality of all other classes in London, but beyond the mortality of the butchers of the rest of the country.

"Fishmongers experience full as high a mortality as butchers.

* See end of paper (page 108).

† 'Insurance Guide' (2nd edit.), Walford, p. 68.

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"The numerous, useful, and as a body respectable men who supply the community with drinks, food, and entertainment in inns, are shown to suffer more from fatal diseases than the members of almost any other known class . . . there can be little doubt that the deaths will be found to be due to delirium tremens and the many diseases induced or aggravated by excessive drinking. It seems to be well-established that drinking small doses of alcoholic liquors, not only spirits, the most fatal of all the poisons, but wine and beer at frequent intervals without food, is invariably prejudicial. When this is carried on from morning till late hours in the night, few stomachs, few brains, can stand it.

"The Clergy of the Church of England, Protestant ministers, Catholic priests, and barristers all experience low rates of mortality from ages 25 to 45. The mortality of Catholic priests after the age of 55 is high; perhaps the effects of celibacy are then felt. Solicitors experience the full average mortality after the age of 35; the legal work is hard.

"Physicians and surgeons from youth up to the age of 45 experience a mortality much above the average: after that age they do not approach the priesthood in health, but differ little from the average. Many young practitioners have hard struggles to encounter. They are in contact with the sick; are exposed to zymotic disease, and their rest is disturbed. In states of depression deadly poisons are at hand. There is an excess of practitioners in cities. Country practitioners have to visit their patients in all weathers and at all hours.

"Commercial clerks experience an exceptionally high rate of mortality. The rooms in which they work are generally close and ill-ventilated. They often stoop at their desks.

"The tobacconists, snuff, and tobacco manufacturers suffer very much at all the younger ages; indicating clearly enough how prejudicial smoking is to young men.

"Independently of the influence of the material and of the work itself on health, the place in which men work exercises so great an influence that it has to be taken into account in judging of the salubrity of their occupations.

"Man is naturally an open-air animal; he is made to work, and the sky is his native covering. So, after taking everything into account, the hunter, the sportsman, and the hus-

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bandman in a cultivated land are at present the healthiest of all workmen. All would, no doubt, be the better if the higher parts of the brain had their due share of activity, and this, though not often the case now, we may hope will come.

"The farmers and agricultural labourers are at present among the healthiest classes of the population classified according to occupation."

A few examples will suffice to show the bearing of occupation on life assurance.

If you are examining a thin, pale man with an indifferent family history, the fact of his occupation being of a sedentary nature, *e. g.* linendraper, clerk in the City, &c., would warrant you in rejecting the life, or only recommending it for acceptance with a heavy addition. On the other hand, if the same individual were destined for an out-door life, such as that of a farmer, he might be taken at the ordinary rate. So, again, a person in the upper ranks of society with a life income might be recommended for assurance, an addition being made, although the action of the heart was not quite satisfactory, whereas the slightest suspicion of heart affection in a candidate who had to make his way in the world, especially if his occupation were of a laborious character, would necessitate the rejection of the life.

Paragraph 2 refers to the social state of the individual, *i. e.* whether married or single. There can be no doubt that, as a general rule, the married state is conducive to longevity. Many causes combine to bring this about; in the first place, selection is in favour of the married, *i. e.* the most vigorous and healthiest individuals are more likely to marry than weak, delicate, or deformed people, this being especially the case as regards women. Again, the mere fact of marriage, certainly in the middle classes, usually points to the man having a competence and to more or less freedom from the carking anxiety of poverty. Moreover, the married state, if a happy one, promotes regularity of life, both as regards meals and hours of rest, and, lastly, from a physiological point of view matrimony has a beneficial effect.

"Voltaire has asserted that the majority of persons who commit *suicide* are *unmarried*, adducing this circumstance

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as an evidence that the wedded state is favorable to the prolongation of life."

"Deparcieux reports, 'that people live longer in a state of matrimony than celibacy—the number of married men who die after the age of twenty being nearly *one-half* less than the number of bachelors dying at the same period; and for forty-three benedicts or widows who reach the age of ninety, there is only one-seventh part thereof of single men found to attain the same age;' and this effect upon the disposition in life is even more important as it applies to females than males."*

## II.

Paragraph 3. In all English assurance offices the question of residence abroad is a most important one, on account of the extensive colonial possessions of this country and the large number of the assured whose business calls them into countries where the risks to life are greater than at home. By residence abroad is practically meant residence out of Europe, because, though the rate of mortality varies considerably in different parts of Europe, still it cannot be affirmed that in any part of Europe the risk is so great that an addition should be made to the premium of those residing there, and there is not much fear that any ill-effects can have resulted from residence in the past. But when the East and West Indies come into consideration, great care must be taken lest the constitution of the applicant should have suffered from residence in these less healthy localities. Particular attention should be paid to the state of the liver and spleen, as it is chiefly these organs which sufier from the effects of living in hot climates. Repeated attacks of dysentery may also have left traces behind them, which may later in life lead to impaired health and a premature death.

As regards the value of life amongst Europeans in India, good evidence has been adduced to show that it has improved, is improving, and that this amelioration is likely to continue.

Paragraph 4. The question of present and past health is

* Walford, p. 86.

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naturally one of the greatest importance, and the examiner should be careful to secure a full and definite answer to it. The presence of any active disease should as a matter of course lead to the postponement of the assurance, for who can tell what may be the issue of even an ordinary cold in an individual who is possibly seen for the first time; it may be the starting-point of bronchitis or pneumonia, and thereby lead to consumption. The nature and date of the last illness should materially influence the medical report. Recent recovery from any of the exanthemata, especially measles and scarlet fever, should suggest the advisability of waiting, inasmuch as people in this condition are liable to suffer from exposure, which under other circumstances would probably have been innocuous. The same rule holds good for all acute diseases.

Paragraph 5. Assurance offices very rightly lay great stress on the correct answering of this question. Attempts have been made to evade it by the applicant mentioning the name of a medical man who has only recently been in attendance for some slight ailment, and by avoiding all reference to one who had attended him previously for a serious disease; but if, as is very likely, this fact should come out after the death of the assured, the policy is liable to be pronounced void on the ground of fraud. It is for the interest, therefore, of the applicant, to take the lowest ground, that there should be a frank disclosure of his past medical history, and the examiner should be careful to obtain the name of the ordinary attendant, as well as of any other medical men who may have been called in. Having obtained the names of his medical attendants, the dates and nature of the illnesses for which they were required must be given, and if there is any doubt as to the correctness of the applicant's description of his past medical history, the physician to the office would do well to write to the medical attendant for information on this point. I have several times found that an illness, which was very lightly spoken of by the applicant, assumes a very different aspect when described by his doctor.

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## III.

In paragraph 6 the applicant is questioned as to whether he has had certain diseases in the past, and when. Each of these will require our attention.

*Fever.*—This includes scarlet fever, typhus and typhoid fevers. If the applicant has completely recovered and has been well two or three months there need be no fear in recommending an otherwise suitable life. After recovery from all febrile attacks it is desirable to allow at least two or three months to elapse before the life is recommended for assurance. A recent attack of scarlet fever should suggest the need of a thorough examination of the urine, and as measles in the adult is occasionally followed by phthisis, particular attention should be directed to the lungs if the applicant has just had measles.

*Ague.*—The effects of ague are, as a rule, much more permanent than those of the diseases last considered. If the applicant intends returning to the district where the ague was contracted I would advise that his proposal be declined. If he be anæmic, or if there be any enlargement of the spleen or other evidence of malarial cachexia, I would also advise declining the proposal. In any case it would not be wise to recommend acceptance for at least six months after an attack of ague.

*Rheumatic fever.*—An attack of acute rheumatism sufficiently severe to keep the patient in bed two or three weeks and to incapacitate him from following his usual occupation for six or seven weeks should suggest the advisability of making an addition equivalent to seven years at the age of thirty, and the life should not be taken for at least five years after the attack. A history of two or three attacks should lead to the rejection of the risk, unless the proposer was over forty and there had been an immunity from acute rheumatism since adolescence. Some offices refuse all applicants with a rheumatic history and cardiac disease; if, however, there has been a complete freedom from all symptoms of rheumatic fever for fifteen or twenty years, the life may be taken with a large addition, provided that the state of the

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heart answers to the conditions mentioned under examination of the heart.

Rheumatoid arthritis requires rejection when it renders its victims infirm and incapable of taking active exercise.

*Gout.*—An attack of gout, even though slight, warrants an addition of at least three years. Dr. Symes Thompson's investigations go to show that hitherto the additions made for gout have hardly been adequate. Short attacks of gout, even though they are more violent and more painful than long ones, are of a more favorable prognosis. If the attacks are frequent and if there be also a strong hereditary tendency the proposal should be rejected, and the same course should be pursued in cases of gouty people who have suffered from glycosuria or from any symptoms suggestive of an anginal attack.

*Spitting of blood and consumption* may conveniently be taken together, as the former is so frequently dependent on the latter. Though I have had unusual opportunity, on account of my connection with diseases of the throat, of examining cases of hæmoptysis in which the blood was supposed to come from the pharynx or larynx, I can only recall to memory one or two cases out of a very large number in which I was able to satisfy myself that the blood really came from the throat, and in almost all the other cases examination of the chest at the time or subsequently showed that it was the source of the hæmorrhage. Hæmoptysis is so serious a symptom that at least ten years must have elapsed before a proposal for assurance could be entertained, and the family history should be free from a phthisical taint; even under the most favorable circumstances a large addition—ten to fifteen years—would have to be made. Only very rarely would it be prudent to recommend for assurance an individual in whom there were evidences of past and quiescent phthisis. Given, however, a favorable environment, good general condition, weight up to average, and an absence of hereditary tendency to phthisis, a life might be recommended with an addition, even though there was impairment of resonance and bronchial breathing at one apex, always provided that a period of at least ten years had elapsed since the lung was affected, and that the applicant was over

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thirty-five. Anything like existing phthisis, however slight, of course requires rejection.

*Scrofula and enlarged glands.*—These may also be taken together. Scrofula is not nearly so important as phthisis from an assurance point of view, as its chief manifestations occur between the ages of five and fifteen, *i. e.* before life assurance is usually contemplated, but scrofulous tumours of recent date, even though they are completely cured, would be a sufficient reason for rejecting the life. Evidences of past scrofula, such as enlarged glands, cicatrices, and disease of bone, indicate as a rule some want of stamina, and therefore require to be taken into consideration in estimating the probability of longevity, and it would not consequently be wise to accept young lives, say under thirty-five or forty, in whom there existed signs of severe scrofula in the past.

*Inflammation of any important organ.*—Most of the acute inflammatory affections of the viscera, provided recovery has been complete, need not prejudice assurance, but there is need of the caution insisted on when discussing paragraph 4, viz., that sufficient time must have elapsed in order to enable the examiner to judge whether any sequelæ have been left by the attack. This is particularly necessary in regard to inflammation of the lungs, especially if there be a family history of consumption. Repeated attacks of pleurisy, especially on the right side, should excite suspicion.

*Insanity.*—Maudsley* says that "insanity does certainly reduce the mean duration of life, and much more so in its recent acute forms than in its more chronic forms. Of all forms general paralysis is the most fatal, other varieties not being as a rule directly dangerous to life." As it is only in the chronic forms of insanity that the idea of assurance could at all be entertained, it will be unnecessary to consider the acute varieties. In reporting upon the life of an insane individual, it must be remembered that tuberculosis is particularly common and fatal among the insane, that they have less resisting power to acute diseases generally, and lastly, there is the liability to suicide.

From the above facts it follows that assurance companies are not very keen in accepting the lives of the insane. Unless

* Reynolds' 'System of Medicine,' vol. ii, p. 58.

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the personal and family history of the applicant is unexceptional, and his general condition good, I would suggest that the risk be declined; in the cases that are accepted a greatly enhanced premium is charged.

*Fits.*—This word is generally used by the public as a synonym for epilepsy and infantile convulsions. With the latter we have now nothing to do, so that we will confine our attention to epilepsy. Apart from the danger of accidental death from injury during an attack, there is always an impairment of mental and physical health in epileptics, therefore the risk is a hazardous one, and an individual who has suffered from epilepsy should not be passed for assurance unless ten years have elapsed since the last attack, and the applicant's surroundings are favorable, and even under these circumstances an extra may be required.

*Paralysis.*—Facial palsy, if due to cold or some other cause acting on the nerve outside the skull, need not exercise any adverse influence. Both hemiplegia and paraplegia are obstacles to assurance, and so are bulbar paralysis, locomotor ataxy, and other diseases arising from sclerosis of nerve-centres.

*Delirium tremens.*—It is hardly necessary to state that this disease affords an insuperable barrier to assurance.

*Asthma.*—I do not think that it would be wise to recommend for acceptance an applicant who is liable to attacks of asthma. If, however, some years have elapsed since the last attack, and if the chest presents no evidence of emphysema, the life may be recommended, possibly with an extra.

*Dropsy.*—That the applicant has or has had dropsy is a bar to assurance, with the single exception of the dropsy which sometimes accompanies acute desquamative nephritis, as, for instance, after scarlet fever. If four or five years have elapsed since the illness, and there have been no signs of renal trouble in the interval, the life may be accepted.

*Jaundice.*—As regards the past history of liver disease, an attack of jaundice, if it can be referred to catarrh of the duct, need not be considered of any importance, if, however, gall-stone colic was apparently the cause of the attack it would not be wise to recommend the life. Any appearance of jaundice at the time of the examination requires that the

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decision be postponed until the applicant is quite free from bile staining.

*Rupture.*—Most offices make a fixed addition of one or two years for rupture. If the occupation is one entailing much muscular exertion it might be advisable to refuse the risk. In all cases assurance should be contingent on a suitable truss being worn.

*Piles.*—If slight and the general condition of the applicant otherwise satisfactory, and there is no suspicion of excess in drink, piles may be disregarded. On the other hand, if they are severe and accompanied with much hæmorrhage the application should be postponed until after the individual has been successfully operated on.

*Stone and gravel.*—If there is any suspicion of stone in the kidney or bladder, the application must be postponed until the doubt has been cleared up or the stone removed by surgical treatment. It has not been my lot to advise as to what should be done in reference to an applicant who has been successfully operated on for a stone, but I am inclined to think that it would be safe to recommend such a life, of course with a considerable addition, provided the person in question seemed likely to carry out the regimen necessary to prevent the formation of fresh stones. Gravel usually points to gout, and it will therefore not be necessary to say anything more on the subject.

*Stricture.*—This is a condition to which I think too little attention is paid in life assurance. I was much struck by an observation I came across in an article on venereal disease to the effect that gonorrhœa was more fatal than syphilis. This statement, without perhaps being literally true, emphasises an important fact, and points to the heavy mortality in the later years of life from bladder and kidney trouble resulting from stricture of the urethra due to gonorrhœa. I think, therefore, that a considerable addition is necessary whenever there is evidence of slight stricture; the more severe forms I would exclude absolutely, especially if there be a gleety discharge.

*Syphilis.*—Though this disease is not included among the list of those about which the applicant is categorically asked, the tendency of modern medicine has been to assign to it

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such an important rôle in the production of morbid changes in the brain and other viscera, that it is absolutely necessary to consider in what respects a history of syphilis will militate against the prospects of life assurance. If the secondary symptoms have been slight and treatment has been carried out persistently and systematically and the applicant has been free from any signs of syphilis for two or three years he may be accepted, but no proposal should be entertained during the period of activity of the infection. Any evidence of cerebral implication, such as violent and long-continued headache, local paralyses, epileptiform convulsions, aphasia, &c., should negative assurance, and the history of syphilis in a somewhat delicate man might suffice to turn the scale in an adverse direction. Evidence of tertiary mischief is generally looked upon as demanding rejection.

*Otorrhœa* is another condition to which much attention has been directed of late, and the risk of assuring persons with this symptom necessitates a careful examination of the ears if there has been or still is a discharge. Otorrhœa due to disease of the middle ear, especially if there be any dead bone, would prevent the life being accepted. Complete deafness is also a bar to assurance.

## IV.

Paragraph 7. The expectation of life is about three years more in females than in males taking the population generally; this however does not hold good in life assurance, where the mortality is greater among the female than among the male policy-holders. No satisfactory explanation of this apparent anomaly can be given.

As regards the risk of child-bearing, Dr. Matthews Duncan's statistics show that it is much greater in primiparæ than in multiparæ, the death-rate being 1 in 74 in the former against 1 in 123 in the latter. It is therefore not advisable to recommend for assurance a woman who is pregnant for the first time until after her safe confinement. The rate of mortality rises again after repeated confinement, *i. e.* eight or nine. Many authorities advise that an addition should

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be made to the premium in female lives during the period of child-bearing, to be remitted afterwards. The history of repeated miscarriages, of puerperal hæmorrhage, and of eclampsia requires rejection, as does also any pelvic deformity which has necessitated obstetrical operations in the past.

Paragraph 8. It is a most difficult matter to get a satisfactory answer to this question. To begin with, men attach such a different significance to the terms "temperate or free."

Candidates frequently say "free" when they mean that they are not teetotalers. Then, again, temperance is quite a relative term, what would be temperance in one man is excess in another. If there is any doubt in the case, I ask the candidate definitely how much he drinks daily, the nature of the beverage, and when taken. If I find that stimulants are taken before noon, I look with a considerable amount of suspicion on the applicant.

In arriving at a conclusion the condition of the tongue, the appetite for breakfast, and the state of the digestion generally, will afford valuable information. Any tremor of the hands and dilated capillaries of the cheek should suggest careful inquiry into habits.

I need hardly say that anything like intemperance is a complete bar to assurance.

Drink is not so much the immediate cause of death as, by inducing degenerative change in the kidneys, liver, lungs, and other organs, it increases the fatality of all diseases occurring in those addicted to excess in alcohol. It is very important to ascertain not only that the applicant is temperate at the time of examination, but that he has always been so. Some teetotalers are reformed drunkards, and these are not good lives.

## V.

Paragraphs 9 and 10 deal with the question of heredity, and though in the earlier days of life assurance little or no attention was paid to this subject, the importance of a good family history cannot be rated too highly, and I once heard a distinguished actuary remark that, given an unexceptional

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family record, the medical examination might be omitted. It will simplify matters if I take the chief diseases in which a hereditary tendency is manifested and consider them *seriatim*.

First in importance comes PHTHISIS, and when it is remembered that about one-ninth of the total mortality of the country is due to this disease, it is manifest that every precaution must be taken to eliminate, as far as possible, individuals having a phthisical taint.

In considering the bearing of heredity on phthisis, Dr. Reginald Thompson makes four classes, and also divides the periods of life into four.

1st class. Implication of one sister, or one collateral relation solely, or of a brother if the disease was developed at a late period of life, and was distinctly acquired.

2nd ,, Implication of brother and sister, many collaterals, especially if on the mother's side, and if there be evidence of sexual limitation, and the father's heredity alone.

3rd ,, Implication of grandparents, the father with one other of the children, collateral relations pointing to atavism, the implication of many brothers and sisters, family asthma, hæmoptysis without family implication, and the mother's heredity alone.

4th ,, Father with many members of the family.
Mother with other members of the family.
Grandparents and parents.
Double heredity.
Hæmoptysis with a history of family implications.

The periods of life are:

1. Before 25 years of age.
2. Between 25 and 35.
3. Between 35 and 45.
4. After 45.

The influence the period of life has on the different classes from an assurance point of view is as follows:

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1. Reject all applicants with a distinct family history before 25.

2. First class might be assured with a small extra premium (3 years) if over 30. For classes 2 and 3 charge ordinary rate, but deduct from sum assured a sum corresponding to the estimated extra risk if death takes place within a stipulated number of years, corresponding to the expectation of life. If usual plan of extra premiums be adhered to, 2nd and 3rd classes should be rejected until they have attained the age of 28. From 28 to 35 class 2 might be taken + 5 years, and from class 3 + 7 years.

3. 1st class ordinary rate, 2nd class + 3 to 5 years, and 3rd class + 5 to 7 years.

4. 1st, 2nd, and 3rd classes ordinary rate, except that cases of paternal heredity still demand some addition, and 4th class much caution in the selection of cases, especially in reference to numbers implicated, and to cases of double heredity and family hæmoptysis. It is not advisable to assure any instances of the two last-mentioned cases.

As regards the assurance of female lives, the risk during the period of child-bearing is so great to a woman who has a history of family phthisis, that Dr. Thompson considers it very unadvisable to accept any such case until the applicant shall have reached the age of forty-eight.

Cancer, in regard to the frequency of transmission, stands next to consumption, but, unlike the latter disease, it is an ascending instead of a diminishing risk, and therefore the younger the applicant the less need for an addition to the premium. It should be remembered that females are more liable to cancer than males. When two or more deaths have occurred in applicant's family and he is over forty the proposal should be refused or taken with a considerable addition. If he were over fifty it might be wise to decline the life absolutely.

Gout has a marked hereditary tendency. If one parent or grandparent has had gout but the applicant himself has not suffered, and is otherwise eligible, he may be taken at the ordinary rate. Where two members of the family have had gout an addition of three to five years will be required, and especial care needs to be taken if the applicant is fat.



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It must not be forgotten that the gouty inheritance may manifest itself in degenerative changes in the heart, vessels, kidneys, &c.

Rheumatism.—In this disease the hereditary tendency is less marked than in those we have already considered, so that if the applicant is twenty-five and upwards I would accept him at the ordinary rate, provided that he had not himself suffered. Where, however, there is a personal as well as a family history of rheumatism, the acceptance or rejection of the application will depend largely on the nature and number of the attacks and the condition of the heart. Two or more attacks, coupled with a strong family history of rheumatism, should cause the proposal to be rejected.

Insanity.—With insanity it will be convenient to consider the hereditary influence of nervous diseases generally. The influence of the mother's insanity is more serious than that of the father, because her disease is more frequently hereditary, and because she transmits it to a greater number of children. With one insane parent, and an absence of nervous affection among his brothers and sisters, an applicant of thirty-five and upwards can be taken at the ordinary rate. As all nervous maladies appear to have a common neuropathic origin, the presence of neuralgia, chorea, epilepsy in collaterals would increase the risk if one or both parents be insane. There seems also to be a distinct heredity in cerebral hæmorrhage, so that if there is the history of apoplexy in one or both parents, it would be safer to reject the life in the event of there being the least suspicion as to the heart or blood-vessels of the applicant, or if he has suffered from acute rheumatism, gout, or syphilis.

In placing on record the causes of death of parents or relatives of the applicant, I would impress upon you the importance of obtaining full particulars as to the nature of the last illness. In no respect is more trouble given to the chief medical officer than from the failure of the medical examiner to elicit the exact cause of death. Over and over again I have to refer to the country examiner for explanation under this head. As an example to be avoided, I may cite, "death after child-birth," the immediate cause not being specified. Now, so many deaths occurring after par-

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turition are due to consumption that, unless there is evidence to the contrary, it would be well to assume that such was the case. "Syncope," "dropsy," "lung disease," are other examples of want of precision and care in filling in the cause of death.

Paragraph 11 calls attention to previous assurances or proposals for assurance, and I would beg of you to be very careful in obtaining a full answer to the questions therein contained. If the applicant has been rejected at some other office, it will be possible for the company with which the applicant is now negotiating to borrow these papers and see the reason for which the proposal was rejected, and there will be the opportunity of comparing notes of the present condition of the applicant with what it was in the past.

## VI.

In the medical examination of an applicant for life assurance it is best to commence with the height and weight. All men of experience in assurance matters are agreed that as a general rule those lives are the best in which a due proportion between height and weight is maintained. To determine this it is necessary to have a standard to refer to, and that given by Sieveking will be found to be fairly correct at the age of thirty.

| Height. | | Standard weight. | | | 15 per cent. under weight. | 15 per cent. above weight. | Circumference of chest, medium. |
|---|---|---|---|---|---|---|---|
| ft. | in. | stone | lbs. | lbs. | lbs. | lbs. | inches |
| 5 | 0 | 8 | 0 | = 112 | 95 | 128 | 33½ |
| 5 | 1 | 8 | 4 | = 116 | 98 | 133 | 34 |
| 5 | 2 | 9 | 0 | = 126 | 107 | 145 | 35 |
| 5 | 3 | 9 | 7 | = 133 | 113 | 153 | 35½ |
| 5 | 4 | 9 | 13 | = 139 | 118 | 160 | 36 |
| 5 | 5 | 10 | 2 | = 142 | 120 | 163 | 37 |
| 5 | 6 | 10 | 5 | = 145 | 123 | 166 | 37½ |
| 5 | 7 | 10 | 8 | = 148 | 125 | 170 | 38 |
| 5 | 8 | 11 | 1 | = 155 | 131 | 178 | 38½ |
| 5 | 9 | 11 | 8 | = 162 | 138 | 186 | 39 |
| 5 | 10 | 12 | 1 | = 169 | 144 | 194 | 39½ |
| 5 | 11 | 12 | 6 | = 174 | 148 | 200 | 40 |
| 6 | 0 | 12 | 10 | = 178 | 151 | 205 | 40½ |
| 6 | 1 | 13 | 0 | = 182 | 154 | 210 | 41 |

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As a Procrustean rule cannot be adopted in life assurance, a certain amount of latitude is necessary; this is furnished by allowing a margin of 15 per cent. in both directions, *i. e.* for under and over weight, anything like 25 per cent. must be looked upon as hazardous, unless there are exceptional reasons in favour of accepting the life. The experience of the United States Life Assurance Company shows that the mortality among the assured who were 15 per cent. and more under weight was 61·2 per cent. in excess of what was expected, this increase being to a great extent due to consumption, 59·5 per cent. of the deaths amongst the underweights arising from this disease. It would not be fair to infer from the above that light weights are specially liable to consumption simply because they are light, but the striking facts which have resulted from the inquiry into the effect of weight from an assurance point of view should lead to extra care in the examination of candidates for assurance who are below the average weight. If there be the least doubt as to the condition of the chest, or if the family history points to a phthisical tendency, the life should be deferred or refused. On the other hand, overweight is also an unfavorable element in assurance, though to a much smaller extent than underweight. The actual mortality of the assured who were 15 per cent. and upwards over-weight was only 7·6 per cent. in excess of the expected as compared with 61·2 for the underweights. The excessive mortality among the over-weights is due chiefly to diseases of the brain, heart, and liver, 44 per cent. of the deaths arising from these diseases, whereas the percentage of deaths in Company at large from the same causes amounted to 23 per cent. Hence early deaths of parents or other relations from diseases of a degenerative nature should suggest great caution in recommending a candidate for assurance who was 15 per cent. and upwards overweight.

In estimating the weight it must be remembered that the table given above is calculated for men of the age of thirty, and that consequently the weight of men under that age might be somewhat less, and above that age somewhat more, without affecting the risk; about a pound a year for every year above or below thirty, would be quite within the mark to allow.

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In connection with height and weight may be taken the circumference of the chest. A man five feet high ought to measure thirty-three and a half inches round the chest above the nipples, and for every additional inch in stature the circumference of the chest should be increased by about half an inch. A full inspiration should increase the circumference of the chest from one and a half to two inches. The shape of the chest should also be taken into consideration, a flat chest pointing to phthisis, whereas if the antero-posterior diameter is increased and the chest inclined to be barrel-shaped, emphysema should be thought of.

A protuberant belly is not desirable from an assurance point of view, but as long as the circumference of the abdomen at the level of the umbilicus does not exceed the circumference of the chest above the nipples, no harm need be apprehended. Attention to the condition of the complexion often reveals information of a most important character. For example, may be mentioned the injected capillaries of the cheeks in chronic alcoholism and some forms of heart disease, the sallowness met with in hepatic derangement, the pallor of anæmia and wasting diseases generally.

The apparent age of the applicant should be compared with his real age, and signs of premature old age, such as baldness, grey or white hair, arcus senilis, &c., should be noted. If with the existence of any of these conditions there is a family history of early death from apoplexy, aneurysm, and other diseases arising from degenerative changes, the examination of the applicant should be conducted with more than usual care, and the life rated up or rejected should there be any suspicion of the commencement of senile degeneration not justified by the age of the individual. The applicant should be told to put out the tongue. This will afford an opportunity of noticing any signs of digestive disturbance or of tremor indicative of alcoholism or commencing general paralysis. Difficulty in protruding the tongue should suggest labio-glosso-laryngeal paralysis. The mouth and throat should be examined for any trace of ulceration pointing possibly to cancer or syphilis.

The condition of the pupils should be noted; inequality

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should excite suspicion of general paralysis, aneurysm, &c., while extreme contraction of the pupils points to locomotor ataxy, the suspicion in this case being confirmed if the knee-jerk is absent.

Though the points which have already been discussed are very important, it is the condition of the heart, lungs, and urine which usually decides whether a case is to be accepted or declined. When the stethoscope first came into general use, and before sufficient time had elapsed to check the results obtained by auscultation, the rule was to exclude all applicants who had a cardiac bruit. A more extended experience has, however, clearly proved that many lives have been rejected which might advantageously have been accepted.

"Dr. Begbie,* for example, found that one-third of the cases of heart disease actually lived longer than the average expectation of life, the remaining two-thirds, however, bearing out the general idea of the greater risk." In coming to a decision as to whether a life is to be rejected, or accepted with or without an addition, three factors in the case require careful consideration: 1. The nature of the valvular affection, *i. e.* the particular valve affected; 2. The condition of the heart itself; 3. The candidate's environment.

1. The prognosis in aortic regurgitation is so uncertain that it is not advisable to accept a candidate with this affection under any circumstances, or for any period, however short. On the other hand, a systolic murmur audible over the aortic cartilage may mean simply some roughening of the valve, and even if there be some obstruction, compensatory hypertrophy of the left ventricle may be so perfect that under favorable circumstances the risk to life is small; obstructive and regurgitant mitral disease may be conveniently considered together from an assurance point of view, as they are so frequently combined and as there is not much difference in the risk. Whether a case of mitral disease is accepted or not depends upon the answers that may be given to the questions under 2 and 3.

Disease of the right side of the heart is so rare that its consideration in life assurance is unnecessary. The medical

* 'Medical Times,' vol. i, p. 360.

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examiner should remember the frequency with which a pulmonary systolic murmur is met with in anæmia.

2. Even more important than the diagnosis of the particular valve affected, and whether there is obstruction or regurgitation, is the due estimation of the condition of the heart. The existence of a valvular lesion, with the evidences of dilatation (hypertrophy under certain circumstances is compensatory), great frequency of action, irregularity or intermittency, should be a bar to assurance. Shortness of breath, increased on exertion, and injected capillaries of the cheek are also indications for rejection.

3. The environment of the applicant materially influences the prognosis in cardiac affections. Given an individual over thirty years of age, in fairly comfortable circumstances and not engaged in a laborious occupation, he may be accepted subject to the reservations above mentioned. On the other hand, laborious and anxious employment in a young man with valvular disease demands the deferment or refusal of the application.

A pulse habitually at or above 90 is unhealthy, and if in the adult man the normal pulse of 70, under examination for assurance, runs up to 90 and more, it shows an emotional impressibility which argues unfavorably against the applicant's power of resisting the inroads of disease.* A too frequent pulse is also one of the indications of phthisis. Extreme infrequency of the pulse, as, for instance, a pulse below 60, should excite suspicion.

As regards the state of the lungs, the course of the medical examiner is clearly defined. If there be the slightest physical signs of existing phthisis the application must be rejected. The same rule holds good for candidates with a doubtful family history, in whom there is evidence of old mischief. There are, however, occasionally cases in which there is the history of old lung trouble, and physical signs of slight consolidation at the apex of one lung. If in these cases the family history is good, the applicant's weight up to the average, his general condition satisfactory, his age at least thirty, and the history of the attack dates back eight or ten years, the life may be recommended with an addition.

* Sieveking, loc. cit., p. 128.

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The importance of the systematic examination of the urine in all cases need hardly be insisted on.

For this purpose, in the case of males, the examiner should insist, for reasons already given, on the urine being passed in his presence. In dealing with women he must be content to examine a specimen sent to him. At the "Rock" the examiner is expected to give the specific gravity of the urine and to state whether albumen and sugar are present or absent.

For the detection of albumen I am content to employ the tried tests of heat and cold nitric acid in preference to any of the more recently introduced tests. Before heating the urine care should be taken that it is sufficiently acid; if only very faintly acid, neutral, or alkaline in reaction, a few drops of dilute acetic acid should be added; if turbid, the urine should be filtered. Then the urine should be poured into a perfectly clean test-tube to about the height of three inches, and the upper part of the column boiled. If a distinct turgidity appears, nitric acid must be added, drop by drop, and if the cloud disappears, it may be considered as due to phosphates, if, on the contrary, the turbidity remains or is increased by the addition of the acid, albumen is present. If there is only a faint opalescence on boiling, it is necessary to hold the test-tube before a dark background, and let the light fall at an angle on it. Cold nitric acid may be used as a confirmatory test, or as a substitute for boiling when the applicant can only pass a small quantity of urine. The acid is first poured into the test-tube, and the urine is allowed to trickle down gradually, the tube being held obliquely, on to its surface; if after waiting for one or two minutes no cloudiness appears at the line of junction of the two liquids, the urine may be pronounced non-albuminous.

For the detection of sugar I rely on Fehling's solution. If sulphate of copper in solution be kept in one bottle, and the neutral tartrate of potassium and caustic soda in another, and the fluids mixed when required, there will be no risk of decomposition occurring; but to guard against any such mishap the mixed solution should be boiled, and only used if it remains of a deep blue colour and is perfectly translucent. The urine may then be added drop by drop until a

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quantity equal to about half the bulk of urine has been taken. If, on again boiling, no precipitate of a yellowish colour occurs, the urine is free from sugar. The examiner should bear in mind that the precipitate must occur at once, otherwise it is not sugar, and he should remember that prolonged boiling may cause the precipitation of the suboxide of copper by reducing agents other than sugar.

The question of the influence of albuminuria on life assurance has engaged much attention of late. Some authorities accept Dr. Perry's view, and speak of functional albuminuria, *i. e.* albuminuria without organic disease of the kidneys, and make a subdivision of cyclic albuminuria, meaning by this expression cases in which albumen is present in the urine at one period of the day and absent at another. Physicians who believe in the existence of functional albuminuria are disposed to recommend applicants in whom this condition exists for assurance. They, however, admit that more than ordinary care must be taken in the examination of the applicant, and that the life should only be taken with an extra premium. Dr. George Johnson and those who agree with him do not believe in the existence of functional albuminuria, but regard the presence of albumen in the urine, however small the quantity may be, or however intermittent, as always pathological. Those who hold this view maintain that it is not wise to recommend cases of albuminuria, even though slight in amount, for assurance, but advise that the consideration of the proposal be deferred, until the question of the presence or absence of albumen is settled one way or the other.

An interesting series of papers on this subject is contained in the report of Dr. John Munn to the United States Life Insurance Company. During the years 1878, 1879, and 1880, he noted sixty-nine cases of albuminuria amongst the candidates for assurance, representing about 11 per cent. of all the cases examined. The individuals in whom this condition was found were kept under observation, and Dr. Munn concludes his third report as follows: "Even with the increased experience of the past year, we must admit, as we did in the last report, that there is still great uncertainty with regard to the clinical significance of albuminuria. In view

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of the fact that four of the number have died, and that the general appearance of the majority of those who have been under observation for more than one year is gradually deteriorating, I am led to believe that albuminuria should be regarded as of grave significance. In some cases, however, it may be of slight importance, and further research may possibly enable us to discriminate between them." This is exactly the position I take. I do not think that the physicians at the head office are justified in recommending applicants for assurance in whom albuminuria exists, even though they have the opportunity of themselves examining the candidates, still less if the examination has been conducted in the country by a medical man, who possibly might only occasionally be called on to examine for assurance. If the applicant is otherwise healthy, under forty years of age, free from cardiac hypertrophy and rigid vessels, and without a family history of Bright's disease, it would be advisable to defer the case for three or six months, and if at the end of this period the urine was found free from albumen, the life could be accepted. If, however, the urine still remained albuminous, the candidate's condition continuing good, a further period of probation might be granted. Candidates possessing any of the unfavorable points just mentioned had better be rejected at once, and the same rule should be applied to cases in which casts are found in the urine.

The question of glycosuria is easier to settle than that of albuminuria, as I take it that no one would recommend for assurance an applicant whose urine contained sugar. The only difficulties likely to arise occur in connection with individuals whose urine may have been saccharine in the past, possibly from some temporary derangement of the digestive system. In such a case, provided the glycosuria has only been slight and temporary, and there is no family history of diabetes, I have ventured to recommend the life with a small addition.

The last paragraph may be considered as furnishing a *résumé* of what has gone before. In it you are asked if you consider the brain, heart, lungs, liver, and kidneys to be sound. You can here draw attention to any condition of these organs which may prejudice life assurance, or if you

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have been unable to detect any disease in them you can affirm that they are sound.

Finally, you have to sum up the evidence for and against the assurance of the life under examination, and to state your opinion as to the advisability of accepting or rejecting the proposal.

In making your recommendation it is well to bear in mind the applicant's expectation of life. A rough and ready, but at the same time tolerably accurate rule for arriving at this is that given by Walford.* Between the ages of twenty and forty-five use the *fixed number*, 96; deduct the present age of the person whose expectancy you desire to know from this number, and the half of the remainder will give the expectancy. Between twenty and thirty the result will hardly come up to the average, and over forty it is slightly in excess. For ages above forty-five take 90 as the fixed number, and proceed as before. The following table will show the years and decimal parts of a year that persons at each age may be expected to live, according to the healthy male table, deduced from the mortality experience of life assurance companies.

| Age. | Expectation of Life. | Age. | Expectation of Life. | Age. | Expectation of Life. | Age. | Expectation of Life. | Age. | Expectation of Life. |
|---|---|---|---|---|---|---|---|---|---|
| 15 | 46·161 | 25 | 38·405 | 35 | 31·016 | 45 | 23·792 | 55 | 16·962 |
| 16 | 45·292 | 26 | 37·658 | 36 | 30·286 | 46 | 23·079 | 56 | 16·316 |
| 17 | 44·438 | 27 | 36·908 | 37 | 29·560 | 47 | 22·375 | 57 | 15·679 |
| 18 | 43·609 | 28 | 36·162 | 38 | 28·838 | 48 | 21·679 | 58 | 15·052 |
| 19 | 42·817 | 29 | 35·419 | 39 | 28·118 | 49 | 20·989 | 59 | 14·435 |
| 20 | 42·061 | 30 | 34·681 | 40 | 27·399 | 50 | 20·306 | 60 | 13·830 |
| 21 | 41·326 | 31 | 33·946 | 41 | 26·679 | 51 | 19·627 | 61 | 13·237 |
| 22 | 40·603 | 32 | 33·213 | 42 | 25·956 | 52 | 18·951 | 62 | 12·659 |
| 23 | 39·879 | 33 | 32·481 | 43 | 25·233 | 53 | 18·281 | 63 | 12·095 |
| 24 | 39·147 | 34 | 31·748 | 44 | 24·511 | 54 | 17·618 | 64 | 11·547 |

I append a copy of the form for medical examination issued by the Rock Life Assurance Company.

* 'Insurance Guide,' p. 162.

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***Information which the Medical Examiner is requested to obtain from the Life proposed for Assurance.***

1. Name, Occupation, and Age of Applicant?
2. Married or Single?
3. If ever Resided abroad?
4. Whether now and formerly in good health, and nature and date of last illness?
5. Name and Address of usual and any other Medical Attendant? When were they required, and for what illness?
6. If ever, and when, had Fever, Ague, Rheumatic Fever, Gout, Spitting of Blood, Consumption, Scrofula, Enlarged Glands, Inflammation of any important organ, Insanity, Fits, Paralysis, Delirium Tremens, Asthma, Dropsy, Jaundice, Rupture, Piles, Stone, Gravel, Stricture, *or any Disease or Accident requiring confinement?*
7. If a Female, State of the Uterine functions? Confinements, if favorable or otherwise?
8. Habits *past and present*—
   Whether Active or sedentary?
   Temperate or free?
9.

| | Age, if Living. | Healthy or otherwise. | Age at Death. | Of what illness. | If unknown, to be ascertained from the Registrar of Deaths. |
|---|---|---|---|---|---|
| Father... | | | | | |
| Mother.. | | | | | |
| | Number and age, if Living. | Healthy or otherwise. | Number and age, if Dead. | Of what illness. | |
| Brothers | | | | | |
| Sisters... | | | | | |
| Children | | | | | |

10. If any near relation, dead or living, has suffered from Insanity, Fits, Gout, Spitting of Blood, Consumption, Scrofula, Cancer, or any other Hereditary Disease?
11. Whether a proposal has been made for Assuring the Life at this Office, or at any and what other Office or Offices, *when* the proposal was made, and whether accepted at the ordinary rate, or declined?

Date 188

Signature of Applicant

***Report of Medical Officer, after he has examined the Life proposed for Assurance.***

Describe the Life proposed—the general Condition, Height and Weight—whether increasing or decreasing—Figure and Complexion, apparent Age, character of the Heart's Action, Pulse, Respiration, &c.

Examination of Urine.
Specific Gravity?
Albumen, present or absent?
Sugar „ „ ?

Do you consider the Brain, Heart, Lungs, Liver, and Kidneys to be *sound?*

Opinion, Remarks, and Recommendations.

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# MICROSCOPICAL TECHNIQUE.

By Dr. HEBB.

The processes whereby a lump of animal tissue is converted into a thin slice, with its parts well differentiated by means of dyes, preserved in a suitable medium, and rendered properly transparent for inspection through a microscope, are various but sufficiently simple. The piece must be fixed, hardened, sectioned, stained, and mounted—five distinct processes, the first of which is probably the most important, although the reagents for bringing this to pass are much the same as those employed for hardening. Associated with these five principal processes are numerous details which, for the end in view, are quite as important; for example, in order to see through a section it must be transparent, consequently it must be "cleared up" in some medium; and so on.

Now, the reason I have raised "fixation" into the foremost place is simple enough; for it stands to reason that unless the tissues are "set" in, or as near as possible in, the condition in which they were in the body, the conclusion drawn from the inspection of a microscopical section will be erroneous. For example, if a piece of soft tissue be plunged into strong spirit or chromic acid, it is probably reduced to about half its original bulk; the resulting lump of hardened tissue will allow of excellent sections being cut from it, but if there be any delicate parts, these will be found almost invisible from shrivelling and unrecognisable from distortion.

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Hence it is advisable to immerse the piece in a fluid which, while it hardens, will cause neither swelling nor contraction. The media for this purpose are solution of chromic acid salts, bichromates of potash, and of ammonia. The first is usually mixed with sulphate of soda in order to increase its penetrating action, and the solution is then known as Müller's fluid. The formula for this is—

| | |
|---|---|
| Bichromate of potash . . . | 2·5—3 parts. |
| Sulphate of soda . . . | 1 part. |
| Water . . . . . | 100 parts. |

Bichromate of ammonia is made up as a 2 per cent. solution, and is employed for hardening brain and cord.

The pieces, about half an inch square, or larger even, are immersed in the Müller for a month or six weeks, or longer.

The fluid, which at first soon becomes turbid, must be renewed constantly until it remains quite clear. When the piece has become sufficiently hard it is transferred to alcohol (methylated spirit) to complete the process, and also to remove the greater part of the chromic acid salt. This part of the process is effected in a day or two. At this point I may mention that besides their fixative properties the chromic acid salts are possessed of two other important qualities: they slowly decalcify osseous tissue, and act as mordants. Besides the two solutions mentioned, there are several other hardening fluids in constant use, such as spirit (to be used first as 33 per cent. and then gradually increased in strength), picric acid, Erlitzthi's fluid, &c. The last is—

| | |
|---|---|
| Bichromate of potash . . . | 2½ parts. |
| Sulphate of copper . . . . | ½ part. |
| Water . . . . . | 100 parts. |

Erlitzthi hardens very well, but renders the tissues somewhat brittle, and I only include it because it is useful for the modified Weigert stain I shall afterwards allude to. Now, this making the tissues brittle is the real inconvenience of chromic acid and its salts, while alcohol has the tendency of making the tissues leathery. Hence one of the reasons for the employment of spirit to complete the hardening process, so that the brittleness imparted by the bichromate may

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be balanced to some extent by the spirit; and if the exact balance, both as to time and quantity, be hit off, the results will be extremely favorable. I have found that with anything except spinal cord, and more especially the dorsal region thereof, the length of time the pieces are left in the fixative matters little. Indeed, I have left tissues in Müller for over twelve months, and found that the results were more favorable than those I had obtained at the end of one month; and in this connection I may mention that Professor Ranvier declares that a spinal cord cannot be properly fixed and hardened under twelve months. With spinal cord I have obtained the best results in six to eight weeks. By a result I mean that the cells and fibres, the most delicate parts, should fill up the spaces in which they lie. If, however, there be only a morbid desire to possess a thin section, by all means use spirit. But if there be nothing else at hand for preserving a specimen, then put it into one third spirit, and increase the strength of the spirit from day to day. With this reagent, as with picric acid and chromic acid, the pieces must be small.

The piece having been hardened, the next thing to be done is to cut it up into thin slices—sections. For this purpose a freezing microtome is required, and the most useful is that known as "Williams'." This can be obtained at several places—Swift's, R. and J. Beck's, &c. Although the price of these instruments is rather high—£3 3*s.*, they work admirably; and the one I use has never failed to freeze thoroughly, even in the hottest weather.

Formerly the freezing was done by means of ice and salt, but now this is almost entirely superseded by ether, which is not only more convenient, but infinitely more rapid and cleaner. If properly manipulated it is quite as cheap, as the price of methylated ether, sp. gr. ·720, is only 1*s.* 7*d.* a pound. Sections the size of a florin, *e. g.* pons varolii, can be cut with this machine. The only caution about its use is to see that the edge of knife is perfectly parallel to the freezing plate, otherwise the sections will be lopsided.

Now, in order to cut sections the piece of tissue must be imbedded, and for this purpose gum in thin solution, to which a few drops of pure carbolic acid have been added, is used.

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The solution should be a little thicker in winter than in summer, because the thinner the solution the harder it freezes, and the more brittle it becomes. Before the piece is placed in the gum solution the spirit must be thoroughly withdrawn, otherwise it will not freeze. This is done by placing it in water; when the lump sinks to the bottom most of the spirit has passed away. It is well, however, to leave it in longer than this. Lung, unless much consolidated, will float after the spirit has been extracted. When the spirit has all gone put the piece in the gum solution, and leave it there for at least twenty-four hours. If the gum keeps good the pieces do not harm if they remain therein for weeks. Nervous tissue, brain, and cord should always be immersed for several days; and except in very hot weather it is advisable to use, for brain and cord, a mixture of gum solution and syrup, in the proportion of about five volumes to one volume.

When cutting the sections it is necessary to have a saucer or glass vessel at hand, filled with lukewarm water, to which the sections are transferred from the knife on a camel's-hair brush. As a rule this is very easily done. Sometimes, however, care is necessary in order to save some special section, say of spinal cord. In this case drop some water on the upper surface of the knife, then place the brush, dipped in water, against the under surface, and turn it round and round parallel to the edge. When it reaches the edge the section will roll itself on to the brush.

After a sufficient number of sections have been cut, they are to be removed from the warm water into a capsule filled with distilled water, wherein they should remain for an hour or two, or until all the gum has been dissolved out.

The sections are next to be stained, in order to show what changes have occurred in the tissues, or to demonstrate the presence of micro-organisms. Very often the morbid appearances have been already correctly divined by differences in colour and consistence; *e.g.* certain parts are soft and yellow—caseation; there are some irregular patches of red—hæmorrhage; hardening with chromic acid salts has shown whitish areas in, say, the lateral or posterior columns, or even the cornua of the cord—sclerosis. These facts should be noted, and are often of much assistance in deciding what part of

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an organ will be the most favorable for examining first of all.

The staining of sections may be divided into two classes :

A. That which serves to differentiate the various elements of a tissue-section.

B. That which is intended to expose the presence of certain parasites.

A. The most useful staining agent is logwood, of which there are numerous solutions. The two I am in the habit of using are known as "water logwood" and the "Ehrlich hæmatoxylin solution."

The formula for the water logwood is—

| | |
|---|---|
| Logwood chips . . . . . | 12 oz. |
| Distilled water . . . . . | 50 oz. |

Heat slowly up to boiling, then allow to stand for twenty-four hours. Filter and add four ounces of potash alum, and four ounces of rectified spirit.

The solution is ready for use at once, and will keep for some time.

Before using this solution it should always be filtered. It is advisable to dilute it with an equal volume of distilled water. When sufficiently stained the sections are to be placed in tap-water until they become of a bluish or slaty colour. They are then transferred to distilled water.

Ehrlich's hæmatoxylin :

| | |
|---|---|
| Dissolve hæmatoxylin crystals . | 2 grms. |
| In absolute alcohol . . . | 100 c.c. |
| Add distilled water } Glycerin . . } . . . | āā 100 c.c. |
| Potash alum . . . . | q. s. |
| And glacial acetic acid . . . | 5 c.c. |

Do not filter. Allow to stand exposed to the daylight for about a month. When the solution has become of a port-wine colour it is about ready to use. It gets darker and darker with age, and consequently acts more rapidly. If the solution lose too much acidity, a drop or two of the B.P. acetic acid will restore its quality at once. This solution never goes bad, and if properly manipulated is really cheap, although the initial cost is large. To use the solu-



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tion half fill a watch-glass with distilled water, and drop in a few drops of the hæmatoxylin solution. Then, when the sections are sufficiently stained, place them in tap-water until they become a beautiful blue colour. The tap-water should be changed at least twice. When the proper hue is attained remove the sections to distilled water. Do not throw away the fluid you have been using, but transfer it to a separate bottle, and use this afterwards (filtered) instead of the distilled water; that is, take half a watch-glassful of this, and put one or two drops of the original solution to it. By this means the Ehrlich solution will be found not only efficacious, but economical.

Now the sections are stained with logwood, which has picked out certain parts, chiefly the nuclei. It is obvious that there are numerous other elements which are capable of being differentiated. Hence stains of different colours or of different hues are necessary. The first great contrast to blue is red; therefore, if red dyes stain parts and elements different from those which assume blue stains (logwood), the section becomes further differentiated. This is found by experience to be the case, for, on the whole, blues pick out nuclei and reds the extra-nuclear portions of cells. To obtain a further or a double staining, as it is called, of the tissues, the best dyes are the acid anilins. These are acid rubin and acid scarlet, made up in concentrated aqueous solution. Of this watery solution take a drop or two to a watch-glassful of distilled water, and transport the section, which has been stained in the logwood, to the aqueous solution of an acid anilin red. When sufficiently stained (sections should be always over-stained, as these dyes lose somewhat in water and in spirit) the sections are washed in distilled water and then placed in spirit. Besides the acid reds there are acid blues and yellows, acid oranges, and acid browns. Some of these are only partially soluble in water, and the addition of spirit is necessary to make a strong solution for stock purposes. The acid blues I have used for intensifying the logwood stain, and also as contrasts thereto. The yellows may be mixed with the red dyes with great advantage, for a triple stain is thereby obtained. This is specially valuable for sections of the spinal cord, where the myelin has an affinity for

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oranges. Acid brown I only use to modify the too great refulgence of the acid reds.

Triple staining is obtained, as just mentioned, by mixing together two or three dyes, or staining the section with solutions of three different pigments one after the other. In addition to the foregoing I sometimes use picro-fuchsin, a combination of acid rubin (fuchsin) and picric acid. Only a very small quantity of picric acid is needful, because it seems to act not only as a third stain, but also as a mordant, intensifying the action of the acid rubin very considerably.

Another good after-stain is picro-carmine, but I have not found it offer any special advantages over the red-orange or red-yellow dyes of anilin origin. It is, moreover, not nearly so cheap, and the solution does not keep so long.

When the sections have been sufficiently double or triple stained, they should be washed in distilled water. They are then dehydrated in spirit: rectified spirit is mostly used, but good methylated spirit answers the purpose quite as well. The sections are next cleared up in oil of cloves, and then mounted in xylol-balsam or xylol-dammar.

B. For staining micro-organisms there are numerous methods, but there are three which will be found sufficient for ordinary purposes: the Erhlich method, for staining tubercle and leprosy bacilli; the Gram method, most suitable for micrococci; and Lœffler's methylen blue solution which is very convenient for staining fungi, such as *Pityriasis versicolor*, and for contrast staining after the Ehrlich method, &c.

The Ehrlich method consists in over-staining with basic fuchsin, and decolourising with nitric acid. The formula is—saturated alcoholic solution of fuchsin 10 c.c., to 100 c.c. of anilin water. The anilin water is made by shaking up some anilin oil with distilled water, and then filtering. Owing to being decomposed by the action of light the solution soon loses its efficacy, and should therefore be made afresh when required for use. Warm the solution in a test-tube, immerse sections, and leave for several hours. Then decolourise with a one-in-three solution of nitric acid. Directly the sections lose their colour or become of a dirty green hue wash in

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distilled water till the colour returns. Then contrast stain with the methylen blue solution, dehydrate in spirit, clear up in oil of cloves, and mount in xylol-balsam. The solution should always be warmed to ensure a successful result, and care should be taken to remove all traces of acid by several washings in distilled water, otherwise the bacilli may lose their colour in a few weeks.

In Gram's method the dye used is gentian-violet, and the solution is made up in the same way as the Ehrlich fuchsin stain, *i. e.* an alcoholic solution of gentian violet is mixed with anilin water. The sections, which should be taken from spirit, are immersed in this solution for several minutes (1—3 or more), and are then transferred to the decolourising solution, which is made as follows :

| | |
|---|---|
| Iodine . . . . . | 1 part. |
| Iodide of potassium . . . | 2 parts. |
| Distilled water . . . . | 300 ,, |

In this they are left until they turn black (two or three minutes). They are then dehydrated in spirit, cleared in oil of cloves, and mounted in balsam. As much of the stain comes out in the spirit, and still more in the oil of cloves, the operator has to look very quick during the last part of the performance. It gives a very pretty picture when successful, but the method is extravagant of oil of cloves. The used oil should be kept for this method only.

The methylen blue solution, which is extremely useful for a variety of purposes, is made by mixing together—

| | |
|---|---|
| Alcoholic solution of methylen blue . | 11 dr. |
| Liquor potassæ . . . . . | 5 drops. |
| Distilled water . . . . | up to 6 oz. |

After the sections have been stained in this solution they may be washed in a ½ per cent. acetic acid, but I have found that this stage may be avoided usually. The sections are, of course, dehydrated, clarified, and mounted in the same manner as before.

In this place it is convenient to discuss cover-glass preparations, inasmuch as they require poocesses similar to the foregoing. Cover-glass preparations may be made of any fluid or juice from the body, such as sputum, urine, pus, &c.

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A small quantity of the fluid is pressed between two cover-glasses, and these slided off from one another, not pulled off, so that an even layer is left. The covers are then allowed to dry, protected from the dust. When dry they are waved two or three times through the flame of a spirit lamp, and then floated face downwards on the staining fluid in a watch-glass. The staining of tubercle bacilli takes a very short time as compared with the time required for staining them in sections, while the decoloration, the contrast staining, and the dehydration in spirit is effected in exactly the same way. At this point a great difference comes in; no clearing up in oil of cloves is required. The cover-glass, when removed from the spirit, is drained on blotting-paper, and then dried by waving it through the flame of a spirit lamp two or three times. This done, a small drop of balsam is placed on the slide, and the cover-glass placed thereupon. It is not advisable to try Gram's method for cover-glass preparations. Although numerous variations of the fuchsin solution have been invented, such as making it up with carbolic acid (5 per cent.) or boracic acid instead of anilin water, and decolourising with sulphuric acid (25 per cent.), none of them are really, to my mind, so satisfactory as that which I have given, provided that the solution be first warmed up to about 100° F.

By making use of the foregoing methods any one will be able to give a very decent account of most pathological products. They comprise the ordinary routine way adopted in most places, and it will have been seen that, with the exception of the microtome, nothing is expensive. Bottles are necessary for keeping the various pieces, and these should be properly labelled with the name, the date, and the disease. With these exceptions, every student has the ordinary histological impedimenta. If, however, money be no object, numerous articles *de luxe* may be purchased, such as microtomes for cutting under alcohol, incubators, &c. For using these, different systems of imbedding are, in the first place, quite obligatory, such as imbedding in paraffin and celloidin. With these I do not purpose to deal here, but I may state that celloidin imbedding can be applied to the freezing microtome if care be taken. The main object of using celloidin is

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to keep friable or delicate structures together during the various processes of manipulation. To imbed in celloidin, all that is necessary is to make a thin solution in equal parts of ether and absolute alcohol. The piece of tissue, thoroughly hardened, is removed from *absolute alcohol* and immersed in the thin solution of celloidin for a day or two. It is then transferred to a solution having the consistence of thick syrup. The syrupy celloidin is placed in a pill-box or other convenient receptacle, and then immersed in methylated spirit, care being taken that it floats or lies evenly. In a day or two the celloidin will have set firmly. Then take out the celloidin block and cut out the piece of tissue, and pare off the celloidin as close as possible to its edges. Next extract the alcohol in water. When this is done, dab some gum over it and section it. Very decent results may be obtained in this way with lung and other loose or friable tissues, but I am bound to say that celloidin is essentially suited for cutting under alcohol by means of an immersion microtome. And, while I am mentioning immersion microtomes and celloidin imbedding, I may say, for the benefit of those who strive after higher things, that by this method a spinal cord may be cut from top to bottom with the loss of a very few sections. In contrast with this, anybody who has had practical experience of the freezing microtome knows that a large number of sections must be unavoidably damaged.

Now, supposing that successful sections by the celloidin process have been obtained, the manipulation of these sections differs considerably from the ordinary method. Staining is performed in the usual way, but dehydration must be effected with methylated spirit, because absolute alcohol dissolves celloidin. Then the sections must be cleared up with bergamot oil, and not oil of cloves, as the latter is a rapid solvent of celloidin. Anilin oil clarifies celloidin sections very well, but they have a tendency to become brownish. The mounting is done in the usual way.

There is one phase of the anilins, basic and acid, which is noticeable, and that is their peculiarity of picking out amyloid degeneration. They all do it, but some more than others. In most there is a distinct difference in tone, and

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this difference is easily recognisable, while in some, as in methyl violet, it is quite characteristic.

Methyl violet picks out the amyloid degeneration as red, while the rest of the tissue is stained blue. In this instance, if the section is to be preserved, it is necessary to mount in a wet medium, such as glycerin or Farrant's solution.

Farrant's medium is a mixture of glycerin, gum, and arsenious or carbolic acid, and is most useful for mounting specimens stained by means of osmic acid. As this medium is tedious and difficult to make, it is advisable to purchase it. I have also used Farrant for mounting worms, crystals, &c.; in fact, it does very well for soft things which will not swell. If a specimen is to be mounted in Farrant, it is advisable to place it for a short time in a two-thirds solution of glycerin previously. When the preparation has become set along the rim—and this will be in a few hours—it is necessary to ring it round with some varnish or lac, otherwise air bubbles soon appear underneath the cover-glass.

Osmic acid in 1 per cent. solution is useful for demonstrating the presence of fat. The sections placed in the solution should be concealed from the light, and when stained removed to two thirds glycerin, and afterwards to pure glycerin or Farrant's medium. Osmic acid is also sometimes used for staining sections of spinal cord, and sometimes as a hardening agent for small pieces of tissue; but I am not eager to recommend it for either purpose, nor even for the demonstration of fat, since this is just as easily discovered by the usual methods.

One more method I will just allude to. It is known as Weigert's method for staining the cord or brain. It is somewhat complicated, and requires the use of an incubator; but very decent results may be obtained from a modification of the procedure, which in itself merely consists in overstaining sections and then decolourising them. The sections must be taken from Müller's fluid and placed in a hæmatoxylin solution made from crystals, and made alkaline with lithium carbonate, having been previously incubated in a solution of neutral acetate of copper at about 100° F. So far the chromic and copper salts are to be regarded as mordants, and these intensify the staining of the sections,

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which become quite black. These are next decolourised with the following solution:

| | |
|---|---|
| Borax . . . . . | 2 parts. |
| Ferridcyanide of potash . . . | 2½ „ |
| Distilled water . . . . | 100 „ |

The sections having been decolourised, but not all their colour removed, are washed frequently, and then mounted in the usual way. Now, if the original method be carried out, the procedure will be found both tedious and expensive, but I have obtained decent results by merely leaving sections which have been fixed and hardened in Müller, followed by Ehrlich, or the latter alone, in a strong alkaline solution of logwood for days or weeks, and then decolourising with the ferridcyanide solution. The method is specially suitable for tracing the course of nerves, and, less so, for transverse sections of them.

The foregoing remarks are only intended to be addrssed to neophytes and those who desire to obtain a decent result at little cost. There is nothing complicated or expensive in any of the methods I have indicated, but they require patience and practice. Anybody can, with a good microtome, cut excellent sections with five minutes' experience, but it takes a good many five minutes to hit off the exact time when a certain piece of tissue should be selected for sectioning. The *crux* of the thing consists in fixing and hardening the tissue you wish to work with; and if I can make those who happen to read this comprehend the difference between mere hardening and hardening *plus* fixation, I shall have done well. Moreover, a piece of tissue or organ which is well hardened and properly fixed will always cut well and stain well, and will therefore present a correct picture.

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# THE TREATMENT OF GLAUCOMA.*

By GEORGE COWELL.

There is a general unanimity amongst ophthalmic surgeons that a large iridectomy is the best, and, if performed sufficiently early, the completely satisfactory method of cuting short the attack known as acute glaucoma. In the hæmorrhagic form they are on less certain ground, and not only defer the operation as long as possible, but are satisfied with a smaller iridectomy. Still they are agreed that this operation eventually becomes the necessary method of treatment.

When, however, they have to deal with the secondary subacute forms, and especially with what is called chronic glaucoma, the only unanimity that remains is the more or less serious recognition of the necessity of relieving the increased tension; but as to how that object can be best attained, opinions are so diverse as to a considerable extent to discredit the surgeon's ability to deal with those forms of disease in any satisfactory way.

Cases will be familiar to most of us, of patients suffering from the more chronic forms of glaucoma, who have been to

* Since this paper was written I have read the able paper read by Mr. Hutchinson at the Leeds meeting of the British Medical Association. I am glad to find that I am so largely in accord with the rules there laid down. My remarks were mostly put together for the previous meeting of the Association, which I was unfortunately unable to attend.

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one ophthalmic surgeon after another, and who have been urged to submit to the favourite method of operation of each in rotation. Some surgeons, indeed, not being satisfied with extolling the operation of their own choice, go out of their way to bewilder their patients by abusing, often in unmeasured terms, the methods which have been advocated by others. Difference of opinion must and will exist, but the violent expression of it is not creditable to our profession and ourselves; and it is disastrous, inasmuch as it destroys confidence, and too often drives patients abroad for a settlement of these differences.

The operative methods by which intra-ocular tension may be reduced are three in number, all of which produce their effect in much the same manner, but in different degrees. They are *Iridectomy, Sclerotomy,* and *Paracentesis of the Vitreous Chamber.* It may be laid down as a general rule that, when successful, the larger the *iridectomy* the more complete and more permanent the result. The same may be said with regard to the wound in *sclerotomy.* Probably the same would obtain in *paracentesis of the vitreous chamber,* whether the wound through the sclerotic be made by a knife or a trephine, but for obvious reasons a large wound of the sclerotic has not been attempted. But this general rule in all these methods must be qualified by another, that in many unfavourable conditions the larger the wound the greater the danger to the eye. I believe that success in dealing by operation with these forms of glaucoma will be found to depend upon a careful balancing and applying of these two axioms to the special circumstances of every case.

It must, then, be admitted that, in the selection of the operation suitable for a given case, it is necessary to consider not only the degree of tension of the globe, a point on which there is always an extraordinary difference of opinion, but also the present condition of the ocular structures themselves, and the special history and peculiarities of the individual. Structures which have for some time been the seat of inflammation or congestion are not in condition for the happy accomplishment of the healing process, and destruction rather than repair may result. The same may be said of eyes which are myopic or hypermetropic in a high degree,

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eyes which are congenitally imperfect, or the eyes of patients who are intemperate or diabetic. In all these conditions there is a greater or less intolerance of operation. It is, therefore, most important that the degree of departure in any of these directions from the healthy condition of the ocular structures should be carefully considered, as they must really determine the choice of an operation for the relief of tension.

There is yet another important point which is worthy of due consideration. It is the degree of facility and dexterity possessed by the surgeon. It would be foolish to ignore that great differences exist in this respect, and that the favorable or unfavorable result of an operation in these cases may often to some extent depend upon the skill, judgment, precision, and delicacy of touch of the operator. In the operations for the relief of tension, the preference for either method on the part of different surgeons is largely, and perhaps to a certain extent unconsciously, influenced by their measure of their own acquirements in this respect. It is a legitimate element in the decision which each surgeon ought to be able to estimate best for himself, and which at all events may be taken to account for some of the differences of opinion which exist amongst them.

With these preliminary statements to clear the ground, I shall not be misunderstood as pressing the acceptance of the following suggestions upon all ophthalmic surgeons. They are the result of my own experience, and put together for my own assistance; and if they are to be of any service to others, they must be considered in connection with the other points above mentioned, and modified as is thought necessary. The rules are of course not applicable to the treatment of acute glaucoma, as I have already said that a large iridectomy upwards performed without loss of time is the only treatment in which any reliance can be placed.

1. *Eserine.*—I always commence the treatment of increased tension with eserine. In most of the cases occurring as secondary to cyclitis, iritis, or keratitis it gives rapid relief, and I have found that in some cases when its use has been adopted very early after the onset of the symptoms it has seemed to be permanent in its curative effect. The

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same may be said of its use in cases where glaucomatous symptoms seem to have been produced by prolonged use of atropine. In true chronic glaucoma, however, the improvement produced by the eserine is very slight, and serves really to fill up the time whilst the patient is deciding to submit to the necessary operation. Besides, this slight improvement soon disappears, and in many of the cases the early discontinuance of the use of eserine becomes indicated by the production of signs of irritation, and even some conjunctival inflammation. Pilocarpine is said to be equally beneficial and less irritating, but I have no experience of its use, as the habitual avoidance of the prolonged use of eserine has prevented the necessity of seeking a substitute for that drug. I use weak eserine, one grain to the ounce only, and sometimes even only half a grain.

2. *Iridectomy.*—I fully endorse Mr. Hutchinson's rule that "the more nearly any case approaches to the type of acute glaucoma, the more probable it is that iridectomy will put an end to the process." A moderately large iridectomy offers, in my opinion, the best means of treating all cases showing inflammatory or congestive symptoms with turbidity of the media; but in chronic glaucoma with diminishing field I prefer a smaller iridectomy, removing the piece of iris, however, well up to its peripheral attachment. This should be done early and repeated if necessary. Dr. Burnett, of Washington, has raised the question as to whether some of the cases of so-called chronic glaucoma are not due to a primary nerve lesion, and really cases of "atrophy with excavation." It is quite possible that this may be the case, but there are still a large number of chronic glaucoma cases in which no atrophy is to be recognised, and yet in which atrophy rapidly comes on after the performance of a large iridectomy. It is this fact that has led me to try a small iridectomy, and I believe that although it may have to be repeated, as may happen even when a large iridectomy has been made, it is less frequently followed by this atrophic change. With regard to the method of performing *iridectomy*, it is not necessary to describe the operation further than to say—(1) that the external wound must be about a line external to the sclero-corneal junction, so that the internal wound may

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be exactly in the line of that junction, or it will be impossible to remove the portion of iris from its ciliary attachment; and (2) that care should be taken, in all iridectomies for tension, to gradually and cautiously evacuate the aqueous humour, that the relaxation of pressure may not be too sudden.

3. *Sclerotomy.*—Experience of this operation in my own hands has not been large, but I have long come to the conclusion that it is inferior to iridectomy in the treatment of glaucoma, very uncertain in its effects, and often followed by destructive changes in the eye. I have not formed this opinion wholly or even mainly from my own results; it has been influenced by cases that have come before me in which the operation has been performed by other surgeons. We do not always see our own failures. It is also true, no doubt, that we do not always see the successes of others. But, so far as my observation goes, the results of the operation have not been satisfactory, and I have almost abandoned its use. I should reserve it for those few cases in which the iridectomy has been repeated, and where, from the established tolerance of operation, there seems to be some hope still remaining of stopping the process of glaucoma. In such cases sclerotomy seems to be the only possible proceeding.

4. *Paracentesis of the vitreous chamber.*—It is some years since that I first punctured the sclerotic with the view of relieving tension of the vitreous chamber. The method has not, I believe, been tried by many surgeons, as it seemed to be analogous to what was known as Hancock's operation, a proceeding which deservedly fell into disrepute. The objection to that operation, which was described as division of the ciliary muscle, has possibly created a prejudice against this proceeding, as it may appear to some to be a revival of an already discarded operation. Yet it appears to me that the great objections to Hancock's operation were twofold, objections which do not obtain in this proceeding. First, the absence of proof that any division of the ciliary muscle was effected; and secondly, the selection of so dangerous a region of the eye for a wound. A wound through the ciliary structures could not fail to be dangerous

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to the integrity of the globe, and, in fact, often set up destructive inflammation of the eye, necessitating in some cases even enucleation to avoid the danger of sympathetic inflammation in the other eye. The wound in sclerotomy is not free from this danger. It has to be made far back and exceedingly near to the ciliary structures, and it is not surprising that destructive changes due to the extension of inflammation from the wound are far from uncommon. But the wound which I have made in what I prefer to call simply "paracentesis of the vitreous chamber" is made sufficiently far back to entirely avoid the ciliary structures. The same thing has been proposed by Dr. Argyll Robertson, only he used a very small trephine instead of a knife. The knife that I prefer for the purpose is a double-edged iris knife, very sharp, and as thin as is compatible with stiffness. The width of the blade should be from 4 to 5 millimètres. The point should be sharp, as it is required to perforate the coats of the eye, and not by any means to detach the retina. I have never, however, known this to happen.

The position of the puncture should be just sufficiently removed from the sclero-corneal junction as to avoid the ciliary structures, and in a corner of the globe, as it were—that is, in a position between any two of the recti muscles. The direction of the thrust should be at right angles to the sclerotic, and with the knife pointing towards the centre of the globe. The blade should not, however, penetrate beyond three or four millimètres, or just far enough to ensure that the full width of the blade shall divide the whole of the structures. The incision should be at right angles to the edge of the cornea, or oblique, but not parallel to it. The class of cases in which I have found this proceeding useful are those of chronic glaucoma, where there are no inflammatory symptoms, where the media are clear, and the cupped disc visible to the ophthalmoscope, and where a considerable diminution in the acuteness of vision has come on rapidly. In these cases I prefer this puncture to iridectomy. It relieves the tension, and in eyes where atrophic changes are absent very considerable and immediate improvement of vision has taken place. A few of the cases have improved from $\frac{6}{60}$ and $\frac{6}{36}$ to $\frac{6}{6}$.

I have observed that in the cases that do best under this

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treatment a small quantity of a yellowish fluid, measuring, I suppose, about a fluid drachm, has escaped by the side of the knife. Before withdrawing the knife I generally endeavour to slightly rotate it to allow of the escape of this fluid if present. This proceeding is only partially possible in such a dense structure as the sclerotic, but it should not be omitted. This escape of fluid has taken place in about half the cases. In the rest nothing escaped until the knife was withdrawn, and then through the gaping wound a small portion of vitreous has presented. This may be cut off with a pair of iris scissors, and the eye tied up with a pad and bandage for two days. The wound readily heals, and for some time the cicatrix may be perceived as a slightly bluish line beneath the conjunctiva, which probably always remains more porous than the undivided sclerotic. At all events, in a few cases that I have seen some time afterwards the tension of the eye had remained normal. The point of great practical interest with reference to this method of treatment will be the possibility of more satisfactorily recognising beforehand the presence of the effused fluid within the vitreous chamber. The operation can be repeated if necessary, but I do not remember to have found it necessary in a single case.

5. *Constitutional treatment.*—It may not be out of place to add one word on the general medical treatment of cases of glaucoma. It can never be ignored with impunity, and is sometimes most serviceable in the early beginnings of the disease. I am of opinion that gout is more often connected with the manifestation of glaucoma than is generally admitted, and that therefore the history of our patients should be carefully studied. Although gout specifics will not cure fully established glaucoma, they are sometimes beneficial in improving the patient's general condition. And the same rule will obtain whatever the constitutional predisposition may be. Nothing should be neglected in this respect, any more than we should neglect the routine use of eserine and the trial of convex glasses in obedience to the hint which nature gives us by the premonitory rapid increase of presbyopia in so many of the cases.

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# FIBROID TUMOURS OF THE UTERUS

TREATED BY

# ELECTROLYSIS.

By Dr. POTTER.

Case 1.—J. C—, single, æt. 39, domestic servant, admitted 5th April, 1888.

*Personal history.*—Patient says she has never been very strong. She has constantly gone to doctors for weakness, debility, touches of the rheumatism, and so forth, but gives no more definite history of previous illnesses.

Catamenia commenced at thirteen, perfectly regular in time and quantity till about eighteen months ago. Then she began to lose considerable quantities of blood at intervals of about a fortnight; this has continued till the present time.

*Present illness* commenced as above described, with fortnightly hæmorrhage, about eighteen months ago, patient at the same time growing weaker and thinner. These symptoms grew somewhat more severe two months ago, *i. e.* patient lost more blood, and at the same time a yellowish discharge began to occur. There was no hæmorrhage between these periodical discharges. Patient was quite unaware of the existence of any tumour till two months ago, when she



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found difficulty in putting on her stays. Since then it has got gradually larger, and patient has been subject to sharp pain in the abdomen, like knives going through her.

*Present condition.*—Patient in bed; complexion sallow. Tongue moist, rather pale. Pulse 92, regular, fairly full. Lungs *nil.* Heart, soft basic systolic bruit. Abdomen occupied by smooth rounded tumour, hard; it at first seems fixed, but more careful examination shows it to be slightly movable. Skin freely movable over it. Central and symmetrical.

Vaginal examination: Cervix high up and very small; hard swelling in front. Os small and high up, almost out of reach of finger. Sound passes four and a half inches.

April 6th.—Sound with some little difficulty passed four and a half inches in forward direction.

*Measurements.*—Tumour symmetrical, extending to umbilicus, about size of a six months pregnancy. Measurement round most prominent part, which is midway between umbilicus and pubes, 29 inches; pubes to umbilicus, 6½ inches; one side of tumour to the other roughly, 7 inches.

13th.—Hæmorrhage more profuse.

17th.—Patient's appetite is extremely poor.

*Measurements.*—Circular, 29 inches; pubes to umb., 6½ inches; one side of tumour to other roughly, 7 inches. Sclerotic acid was used subcutaneously twice; since then it has been given by the mouth.

24th.—Catamenia ceased on 15th, no bleeding since.

26th.—Sclerotic acid gr. j injected to-day for third time.

27th.—Tumour extends to one inch below umbilicus. Patient's appetite remains very poor.

May 2nd.—Catamenia commenced. Two fingers' breadth exists between umbilicus and tumour.

3rd.—Sclerotic acid gr. j injected to-day fourth time.

5th.—Catamenia (three days) ceased, very scanty.

11th.—Sclerotic acid gr. j injected daily for last ten days.

15th.—Sclerotic acid gr. j. injected daily.

18th.—Patient was sick yesterday. Temperature rose to 101·4.°

20th.—Hæmorrhage yesterday, and to-day somewhat increased temp., 99·7°.

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25th.—Period less, and since injection somewhat less discharge. Three fingers' space between umbilicus and tumour.

June 1st.—Space between umbilicus and tumour not much over one finger.

5th.—*Vaginal examination.*—Cervix very high, introduction of sound difficult, but passes easily 4¼ inches. Sclerotic acid injection into buttock still continued.

8th.—Tumour still about same size, a little over a finger's breadth between tumour and umbilicus.

12th.—Patient doing well, condition unaltered.

29th.—Discharge commenced on the 26th, very profuse, but not quite so much as last time, still continuing. The injection has not been used since last note. Hot douche at 110°—115°.

July 6th.—Patient about the same. Tumour appears to decrease in size between the periods.

10th.—Catamenia continuously since June 26th. Douches no effect.

13th.—Discharge continues.

24th.—Vaginal examination as before, sound not used.

26th.—Tumour is very symmetrical, increasing in size at periods and decreasing between.

29th—August 4th.—Catamenia commenced and finished, and nothing like so profuse as the previous one of June 26th that lasted three weeks. Patient sent to the country for change of air.

Readmission October 1st, 1888.

October 9th.—The abdominal tumour extends to the umbilicus.

*Circumferential measurements.*—At umbilicus 32 inches; midway pubes and umb. 31 inches. Last catamenia ended on October 4th.

13th.—The vaginal cavity having been washed out with antiseptic solution, the positive pole of battery was inserted into uterus and negative in front of lower part of abdomen. The continuous current was passed for ten minutes, increasing till 50 M. was reached. The vagina was again washed out afterwards. Patient complained of some soreness where the pad had been applied.

16th.—The battery was again used to-day for ten minutes,

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commencing at 50 M. The first five minutes ranged between 80 and 100 M., the second five minutes was increased to 180.

18th.—Catamenia commenced to-day.

19th.—Battery not used on account of catamenia. Patient losing large quantities, and at times complains of feeling faint. Catamenia only lasted three days instead of usual six days.

23rd.—Catamenia ceased yesterday. Battery used again to-day for ten minutes, commencing at 50, rapidly increasing to 130, and the last two minutes at 200.

26th.—Battery ten minutes, starting at 90, rapidly increasing to 120, last three minutes 170.

31st.—Battery ten minutes, starting at 80, 100 (three minutes), 180 (three minutes), 200 (one minute).

November 2nd.—Battery was started at 70, and continued for three minutes; the current then suddenly stopped for some unknown reason. It was afterwards put on again, and continued for ten consecutive minutes as follows: $\frac{3}{80}$, $\frac{2}{120}$, $\frac{3}{180}$, $\frac{1}{180}$, $\frac{1}{170}$.

3rd.—The tumour seems much larger since the last application of electricity, extending above the umbilicus one inch. This is always the case.

6th.—Battery ten minutes, 7th time, $\frac{2}{100}$, $\frac{2}{180}$, $\frac{3}{140}$, $\frac{3}{180}$.

9th.—Battery ten minutes, 8th time. To-day a clay pad was used instead of the ordinary damp flannel. Starting at 140 with 22 cells, it rapidly reached 190 with 28 cells, and was maintained for ten minutes.

23rd.—Battery ten minutes, 9th time, $\frac{1}{120}$, $\frac{3}{180}$, $\frac{4}{200}$, $\frac{2}{200}$.

26th.—Battery ten minutes, 10th time, $\frac{1}{200}$, $\frac{2}{190}$, $\frac{7}{190}$.

30th.—Battery ten minutes, 11th time, $\frac{1}{170}$, $\frac{2}{200}$, $\frac{7}{200}$.

December 4th.—Battery not used. Catamenia commenced. The interval is shorter this time by some days.

20th.—Catamenia have continued off and on for last fourteen days and battery could not be used.

26th.—Battery ten minutes, 12th time, $\frac{1}{120}$, $\frac{2}{140}$, $\frac{3}{180}$, $\frac{5}{160}$.

29th.—Battery ten minutes, 13th time, $\frac{1}{110}$, $\frac{2}{140}$, $\frac{7}{180}$.

January 1st.—Battery ten minutes, 14th time, $\frac{1}{170}$, $\frac{2}{165}$, $\frac{7}{165}$.

4th.—Battery ten minutes, 15th time, $\frac{1}{170}$, $\frac{3\frac{1}{2}}{165}$, $\frac{5\frac{1}{2}}{185}$.

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8th.—Battery ten minutes, 16th time, $\frac{1}{185}$, $\frac{2}{170}$, $\frac{3}{165}$, $\frac{2}{160}$, $\frac{2}{185}$.

11th.—Slight reddish discharge commenced. Battery not used.

15th.—Battery ten minutes, 17th time, $\frac{7}{200}$, $\frac{8}{190}$.

18th.—Catamenia commenced, has not lost so much this time as previously.

February 4th.—*Vaginal examination.*—Sound passed with difficulty two inches; it was not persevered with owing to a little bleeding. Battery ten minutes, 18th time, $\frac{1}{180}$, $\frac{5}{180}$, $\frac{4}{200}$.

8th.—Battery ten minutes, 19th time, $\frac{7}{190}$, $\frac{3}{180}$. Os more patulous. After the application of the battery on the 4th, the bleeding increased and continued till the 8th. On the 8th the positive pole after being withdrawn was only covered with whitish-brown coloured mucus.

12th.—Since the battery was last used she has had a reddish-brown discharge, which has a very offensive odour. Since the 10th inst. she has had pain, which she describes as bearing-down pains.

*Abdominal examination.*—Highest point of tumour nearly three fingers' breadth below umbilicus. The abdomen is flatter in appearance.

*Vaginal examination.*—Os dilated to the size of a crown piece, through which is coming down a soft fleshy mass, which is extending nearly down to the vulva. Battery not used.

14th.—To-day a reddish coloured mass with grey edges was removed by Dr. Potter. It was found to weigh 2½ oz. Microscopical examination was impossible, owing to the sloughing condition of the tissue.

15th.—*Vaginal examination.*—Os closing, admits only tip of finger. Nothing to be felt inside. Battery not used.

17th.—Discharge which commenced on 14th continues; it is not disagreeable in odour.

19th.—*Measurements.*—Umbilicus 30 inches, most prominent part 31 inches.

*Vaginal examination.*—Os very irregular, now nearly closed. Brownish discharge on finger when withdrawn.

26th.—Battery ten minutes, 20th time, $\frac{5}{170}$, $\frac{5}{180}$. The

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electrode was passed with some difficulty, owing to the rigidity and contraction of the os. Some red discharge on removal.

March 1st.—Battery ten minutes, 21st time, $\frac{1}{60}$, $\frac{1}{80}$, $\frac{1}{60}$, $\frac{4}{240}$, $\frac{8}{180}$, $\frac{4}{180}$.

6th.—Battery ten minutes, 22nd time, $\frac{10}{180}$. Os before its use was rather patulous, light discharge. There was on withdrawal of sound some white thick leucorrhœal discharge.

8th.—Battery nine minutes, 23rd time, $\frac{4}{280}$, $\frac{8}{200}$, $\frac{8}{190}$. Sound passes three inches; when removed it is covered with a frothy brownish discharge, which is also on the finger.

12th.—Battery nine minutes, 24th time, $\frac{8}{225}$, $\frac{8}{200}$. Light brownish discharge on sound.

15th.—Battery not given, as catamenia commenced to-day.

19th.—Battery ten minutes, 25th time, $\frac{8}{170}$, $\frac{8}{180}$, $\frac{5}{160}$. When sound was withdrawn it was stained with a brownish-yellow discharge, no blood.

22nd.—Battery ten minutes, 26th time, $\frac{4}{200}$, $\frac{4}{172}$, $\frac{2}{180}$. No discharge on sound, only a little frothy matter.

26th.—Battery ten minutes, 27th time, $\frac{8}{170}$, $\frac{6}{180}$, $\frac{1}{70}$. Sound passed four inches, difficult to introduce.

29th.—Battery ten minutes, 28th time, $\frac{10}{180}$. The sound is more difficult to pass. The tumour is difficult to define. Sound passes three inches; there is a little brownish discharge. Abdomen resonant all over.

April 2nd.—Battery not given, as catamenia commenced on 1st. The discharge is reddish in colour, no clots, preceded by and attended with pain in her back.

5th.—Battery not given, as catamenia continued.

9th.—Battery not given.

*Abdominal examination.*—Head of tumour felt with difficulty three fingers' breadth below umbilicus. The tumour is made out at all with great difficulty.

*Measurements.*—Anywhere round abdomen 33 inches; from pubis to umb. 6½ inches; from pubis to ensiform cartilage 13 inches; right anterior superior iliac spine to umbilicus 7½ inches; left anterior superior iliac spine to umbilicus 7¼ inches.

*Vaginal examination.*—Cervix reached with difficulty, edges rough and fissured, almost flush with top of the vagina. Sound

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passed with great difficulty 3½ inches; it is deflected by pressure on abdominal tumour, and on removal is partly covered with blood.

*Bimanually.*—Head of tumour is felt about four fingers' breadth below umbilicus, and is about 2½ inches broad.

12th.—Patient goes to-day to Convalescent Home at Norwood.

CASE 2.—A. E. H., æt. 41, married, admitted September 13th, 1888.

*Family history.*—Father and mother both dead, the former of phthisis. Mother was laid up with large uterine fibroids, but the immediate cause of death was congestion of the lungs. Maternal grandmother died in this hospital after operation for removal of abdominal tumour.

*Previous history.*—Patient has had bad health for the past eight years, suffering from swelling of the legs and difficulty in passing her water. States that when she was fourteen she got English cholera, and as the result of this got a stricture of some portion of the bowel, going a month at a time without any evacuation. Eighteen years ago she went into St. Thomas's Hospital for the purpose of having colotomy performed, but she refused to be operated upon, and the stricture was dilated with instruments.

*Sexual history.*—Catamenia commenced at seventeen, shortly after her marriage—she was married at sixteen and a half years of age—always scanty in quantity, but regular every four weeks, lasting three days. Always attended with pain. No living children, but two premature births and one miscarriage.

*Present illness.*—Began 1880. Had a miscarriage in 1879, from which she recovered, though the discharge lasted seven or eight weeks. About three months after this she became unable to retain her urine, and had bearing-down pains and pains in the pelvis. The incontinence was also worse in the supine position. Sometimes she gets retention of urine, which has to be relieved by catheter. The urine is often thick and stringy like matter. She attended in the out-patient department for fibroid increasing in size, from 1880 to 1884, but without gaining much benefit. In October,

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1884, she became an in-patient, suffering from the same symptoms. The following note was made: "Abdomen occupied by symmetrical tumour extending midway between pubes and umbilicus, the size of a five months pregnancy. It feels hard but semi-elastic in character.

*Per vaginam.*—Cervix pressed forward, os small, sound passes two inches in forward direction, can be moved to right but not to left. A second smaller tumour is felt *per vaginam* on the left side of the pubes." In October, 1886, she was again admitted; "physical signs unchanged since last note." Treatment consisted in inserting a pessary, retained by a T-bandage, bladder relieved by catheter every six hours. Bladder symptoms much improved under treatment. She was seen from time to time until September 13th, when she was again admitted into the hospital. She states that during the summer she has been treated by electricity for four months.

September 14th.—Patient in bed, well nourished, complains of pain in hypogastrium and back. States she cannot sit up or stand without support. Bowels never moved without medicine. Urine constantly running away from her; sp. gr. 1010, acid, with a trace of albumen.

20th.—Dr. Grigg removed a small fibrous mass from the anterior wall of the vagina; the growth, not quite the size of a marble, was in close connection with the urethra, and was removed piecemeal, as in the attempt at enucleation it broke down. The capsule of the tumour was afterwards sutured, and the vagina plugged with antiseptic gauze.

21st.—Patient complains of pain in the hypogastrium, but very little at seat of operation. Also much pain when the catheter is passed. Urine thick, and contains much mucus.

26th.—Urine alkaline, sp. gr. 1014, very thick and stringy, contains albumen and pus. There has been no rise of temperature since the operation.

October 15th.—Patient has remained much the same, as regards the bladder symptoms, since last note. The following measurements were taken to-day: Greatest circumference of abdomen two inches below the umbilicus, 32½; transverse, 9½; ventral, 6. Sound passes in a forward direction 3½ inches. Impulse from above well marked.

19th.—Battery was used to-day for ten minutes, the vagina

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washed out with carbolic solution before and after the operation. One pole, positive, placed in the uterus, and a pad on the abdomen. The current was commenced at 70 milliampères, rapidly increasing to 225, maintained at that for seven minutes, and ultimately, the last three minutes, 280.

23rd.—Battery to-day, commencing at 70, gradually increasing to 180; ultimately 250 is reached and maintained the last three minutes. Whole sitting, ten minutes.

26th.—Battery ten minutes, 130 for two minutes, 220 for five, and 260 the last three minutes.

November 2nd.—Battery ten minutes, $\frac{1}{80}$, $\frac{2}{220}$, $\frac{7}{225}$. The application had not been made between the last two dates, as the catamenia had appeared, this time lasting three days instead of the usual six.

6th.—Battery, 5th time, ten minutes, $\frac{1}{160}$, $\frac{2}{200}$, $\frac{2}{225}$, $\frac{5}{190}$. There was a slightly coloured discharge when the vaginal douches were used after this application. Patient was very quiet afterwards for the remainder of the day, and was very sick.

7th.—At 8 a.m. to-day the temperature, which had hitherto been normal, rose to 99·2°, continuing its upward course until 4 a.m., when it was 102·6°. Patient complains of violent pain in the abdomen; there is no discharge. Vomiting continued more or less all the day.

8th.—Still complains of much pain. Temperature at noon 102°. Pulse 129. Sickness continues on and off.

9th.—Temperature at noon 99°. Pulse 136. Temperature rose in the afternoon, but at midnight was again 99°. Sickness from 4 p.m. on 8th to the same time on the 9th.

10th.—At 4 a.m. temperature rose to 100°, and continued to rise after that day until the time of death, when it reached 107°, and afterwards 108°. At 8 a.m. pulse 144, respirations 56. Patient was in a more or less comatose state throughout the day, but at times shrieked out as if in pain. Sickness continued until death. There has been no discharge since November 6th.

Post-mortem examination was made by Dr. Hebb on November 12th, 1888. Body well nourished. Rigor persistent. Brain 45 oz. Excess of fluid in pleural sac, compression of right lung. Suppurative pleuritis of right side.

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Left pleura normal, left lung œdematous. Heart 8½ oz., aortic cusps somewhat thickened but competent. At base of aorta is an almost complete ring of calcareous atheroma. Mitral valve normal. Liver 45 oz., normal. On opening the peritoneal sac the lower part is found to contain a dirty brownish fluid. Its serous surface is covered with a thin layer of pus. The pelvic connective tissue on the right side, and that on the right side of the trunk almost as high as the liver, is in the first condition of slough, being brown, soft, boggy, and offensive; at the extreme apex of the bladder and just behind the symphysis pubis is a hole with shaggy yellow edges. The hole leads from the bladder and communicates with the pelvic connective tissue, and apparently quite recently with the peritoneal sac. On opening up the bladder, in addition to the sloughy hole which would admit a No. 12 catheter, there is a mass of sloughy mucous membrane, equal in size to a crown piece. The uterus is the seat of six large spheroidal fibroids, which vary in size from a walnut to an orange, the largest being at the fundus. Owing to the pressure of these tumours the cavity of the uterus is much altered in shape, and is widened considerably from side to side. In length it is just 2¾ inches; the length of the uterus externally is just 6 inches. The mucosa of the uterus is quite normal.

Case 3.—E. P—, æt. 41. Married. Admitted January 2nd, 1889.

*Family history.*—Father died at 80, mother at 75. Six brothers living, one dead. Two sisters living, two dead.

*Personal history.*—Quite well up to twenty-two years ago; since that time has had occasional attacks of pain in the side. Six years since patient had flooding, which she states was continuous for sixteen weeks. Went to the East Suffolk Hospital, where she remained four months, and was told that her womb was displaced. Womb was put back into position at the hospital. Since that time patient was quite regular.

*Sexual history.*—Catamenia commenced at age of eleven, and were quite regular every fortnight up to six years since. Married 22 years; no children, no miscarriages.

*Present illness.*—Quite well up to last summer, when

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patient became short of breath, but had no further symptoms until October, when she complained of pain in the lower part of the abdomen on the left side. This pain was continuous, but worse at the periods. Soon after this she noticed a swelling in her abdomen which seemed about the size of a cricket ball, and was very tender. Patient went to a doctor, who examined it every fortnight, and noticed that it increased in size. Patient thinks that it seems larger before and smaller after her periods.

*Present condition.*—On examination of abdomen a slight bulging is noticed in lower part. On palpation a firm tumour is felt, situated in the hypogastric region; the skin over swelling is extremely tender, and this tenderness is not confined to this alone, but extends over the left side of the abdomen. Percussion is difficult on account of the pain occasioned; a dull note is obtained over region of swelling.

January 3rd.—*Measurements* of tumour are—from above downwards 4½ inches, from side to side 5½ inches, and extending rather more over to right side. Circumference of abdomen taken over most prominent part of tumour is 32½ inches.

6th.—Catamenia commenced, and ceased on January 16th.

*Previous notes* (taken while patient was in Holland Ward). —Os and cervix small. Sound passed 5½ inches in forward direction. Cavity not enlarged. Impulse marked. On examining abdomen, abdominal tumour more on right side.

18th.—Sound passes 5 inches, is passed with difficulty through internal os. Battery eight minutes, 1st time, $\frac{1}{140}$, $\frac{3 \cdot 8}{150}$ (thirty-two cells are used each time). Patient complained of shooting pains for some hours after battery was used. Negative pole on abdomen, positive connected to sound. The tumour felt especially in front and to right. Tumour extends three fingers' breadth below umbilicus. After battery a brownish discharge commenced, and lasted a day and a half.

25th.—Battery ten minutes, 2nd time, $\frac{1}{100}$, $\frac{4\frac{1}{2} \cdot 10}{105}$. (Different battery used, caused more pain.)

29th.—Battery ten minutes, 3rd time, $\frac{1}{110}$, $\frac{5 \cdot 10}{100}$. Rheostat used, pain on passing current.

February 1st.—Battery nine and a half minutes, 4th time, $\frac{1}{100}$, $\frac{1}{120}$, $\frac{2}{250}$, $\frac{6}{200}$. Patient complained of a good deal of pain.

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2nd.—Slept very little last night on account of pain. No discharge.

4th.—Battery ten minutes, 5th time, $\frac{4}{180}$, $\frac{6}{200}$.

8th.—Battery not given, as period was on.

14th.—Catamenia, which commenced on 7th, finished to-day; it was not (the flow) as much as usual; colour was bright red and reddish-brown; number of clots, with pain on passing them.

15th.—Battery ten minutes, 6th time, $\frac{1}{180}$, $\frac{3}{180}$, $\frac{2}{180}$, $\frac{4}{170}$. Sound passed 5 inches.

18th.—There has been a reddish-brown discharge since the evening of the 15th.

19th.—*Measurements.*—Tumour more prominent; across 6 inches, vertical 6 inches. Circumference, most prominent part, 35 inches. Discharge now bright red.

26th.—The discharge, which had stopped on Friday, came on the night of the 25th, and was bright red in colour. Battery used ten minutes, 7th time, $\frac{1}{180}$, $\frac{1}{170}$, $\frac{5}{180}$, $\frac{3}{140}$. There was a little clot on sound, but not any on finger on removal.

March 1st.—Patient has lost considerably more since the battery was used last. The discharge is still of a bright red colour. Battery ten minutes, 8th time, $\frac{3}{180}$, $\frac{7}{180}$. When sound was removed it was blood-stained.

6th.—There has been an increase in the amount of discharge and pain. Battery ten minutes, 9th time, $\frac{4}{170}$, $\frac{6}{140}$. Sound withdrawn, blood, and on finger as well.

8th.—Patient still has a discharge, pinkish in colour; it is a continuous discharge although it alters in colour. Battery ten minutes, 10th time, $\frac{4}{200}$, $\frac{6}{170}$. Sound passed $4\frac{1}{2}$ inches. There is a faint yellowish-brown discharge on withdrawal of finger and sound.

12th.—Head of tumour is now four fingers' breadth below umbilicus. Battery ten minutes, 11th time, $\frac{3}{170}$, $\frac{7}{160}$. Sound passed $4\frac{1}{2}$ inches; when withdrawn a frothy brown material, and on finger.

14th.—Temperature since 11th has been gradually rising; on 12th 100° F., 13th, 8 a.m., 98·6°, 8 p.m., 101° F.; 14th, 8 a.m., 99°, 8 p.m., 102°. Patient has pain in left groin, aching and stabbing in character. Shivered on evening of 13th.

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15th.—The head of tumour is now about three fingers' breadth below the umbilicus. The battery was not used, as patient's abdomen was extremely tender (in left iliac region), and the temperature has been rising from 13th at 8 p.m. to 101°; 14th, 8 p.m., 102°. Temperature now declining.

16th.—Temperature 100° at 8 a.m.; not feverish.

19th.—Yesterday catamenia commenced; blood and a clot came away. Battery not given.

22nd.—Catamenia ceased on 20th; it was succeeded by a yellowish discharge which lasted until evening, when she had a return of blood in the discharge. Temperature normal.

26th.—Battery not given owing to the pain until to-day, when it was given for ten minutes, 12th time, $\frac{10}{160}$. Sound passed 3 inches; whitish discharge.

29th.—Battery ten minutes, 13th time, $\frac{7}{170}$, $\frac{8}{160}$. Sound passed 4½ inches. Slightly brownish discharge on withdrawal.

April 2nd.—Battery ten minutes, 14th time, $\frac{5}{180}$, $\frac{5}{140}$. Sound passed 5 inches; froth on withdrawal.

5th.—Battery ten minutes, 15th time, $\frac{5}{170}$, $\frac{5}{160}$. Sound catches midway in a fold; it passes 4 inches. No discharge on withdrawal.

9th.—Battery not given to-day, as the sound attached to the battery was unable to be passed more than one inch, as it seemed to catch in a fold of mucous membrane, although the uterine sound passed 4½ inches.

12th.—Battery not given, as patient was given a week's rest.

16th.—Battery not given. Symphysis pubis to top of tumour, 6 inches; transverse, 5½; most prominent part, 32.

23rd.—Sound passed easily 4½ inches, after passing an obstruction one eighth inch from external os. Battery ten minutes, 16th time, $\frac{10}{160}$. Some brown frothy discharge on sound, and clot on removal.

26th.—Battery ten minutes, 17th time, $\frac{5}{160}$, $\frac{5}{140}$. Sound passed 3 inches. No discharge.

30th.—Discharge from Tuesday to Friday and from Friday to Tuesday. Battery ten minutes, $\frac{8}{170}$, $\frac{1}{160}$, $\frac{7}{170}$, 18th time. Brown tinged discharge on finger. Sound passes 3½ inches.

May 3rd.—Battery ten minutes, 19th time, $\frac{8}{180}$, $\frac{7}{140}$.

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Sound passed 4½ inches. No discharge. Number of cells of battery used, 32.

7th.—Battery ten minutes, 20th time, $\frac{8}{200}$, $\frac{7}{170}$. Sound passed 4½ inches.

14th.—Battery ten minutes, 21st time, $\frac{10}{180}$. Sound passed 4¾ inches. Frothy mucus on withdrawal.

17th.—Battery ten minutes, 22nd time, $\frac{5}{180}$, $\frac{8}{180}$, $\frac{8}{180}$. Sound passed just under 3 inches.

21st.—Battery ten minutes, 23rd time, $\frac{10}{180}$. Sound passed 4½ inches. Reddish discharge on finger.

25th.—Battery suspended, as patient is menstruating.

June 4th.—Battery ten minutes, 24th time, $\frac{8}{190}$, $\frac{7}{170}$. Sound passed 3½ inches.

7th.—Battery ten minutes, 25th time, $\frac{8}{180}$, $\frac{8}{170}$, $\frac{5}{180}$. Sound passed 1½ inches.

11th.—Battery ten minutes, 26th time, $\frac{1}{100}$, $\frac{8}{170}$, $\frac{6}{180}$. Sound passed 4½ inches with ease.

14th.—Battery ten minutes, 27th time, $\frac{8}{180}$, $\frac{8}{170}$, $\frac{5}{180}$, $\frac{1}{180}$. Sound passed 2½ inches.

18th.—Battery ten minutes, 28th time, $\frac{8}{180}$, $\frac{8}{180}$. Sound passed 4½ inches. Slight coloured discharge (menstrual?).

20th.—Patient discharged to-day; says she feels decidedly smaller and better than she has been for some years.

I have recorded these cases at some length, as the subject of electrolysis is just now receiving a great deal of attention in its relation to the treatment of fibroid tumours; and although they are necessarily few in number, owing to the length of time occupied in their treatment, they are fairly representative cases.

The first case, that of J. C—, was an instance of a very successful result. She had been under observation some time, and other methods had been employed, including rest, but without benefit. The throwing off the slough, although only a thickened lining membrane, still seemed to exercise a decided effect on the case, as from that time the bleeding ceased and has not returned. It may be said that this was a case where the occurrence of the menopause caused the relief of the symptoms; but it was early in its occurrence taking the age and history of the woman into consideration; but even then the

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rapid diminution of the tumour is extremely rare; for though it is stated that these tumours sometimes are absorbed after this time, the result is not often met with in practice. Still the fact remains that this woman, who was drained by loss of blood, and suffering inconvenience from the size of her tumour, which incapacitated her from following any occupation, is now able to work and to get her own living.

With regard to the second case, the fatal issue was most unfortunate, and was clearly connected with the treatment, although from the long-standing cystitis the tissue of the bladder was in a very rotten condition, and it is by no means certain that the electrode was not on one or more occasions introduced into the bladder itself. As to the ultimate effect on the tumour, had not death supervened it is more than doubtful whether benefit would have accrued. She had already been treated by electricity, and without much result.

The third case was benefited somewhat as to the bleeding, but the size of the tumour, as estimated by palpation and the use of the sound, did not appear to be much affected; the woman herself stated that she was considerably smaller, and that she felt better than she had done for many years. Time, of course, alone will show whether any permanent benefit has been achieved.

At present the treatment has only been employed in cases where bleeding has been a prominent symptom, and where the electrode, positive pole, has been introduced into the uterine cavity. Puncturing has not been resorted to. The principal objections to the treatment are the cumbrous nature of the instruments required, the expense, and the long duration of the treatment. We have generally made twenty-eight applications, spread over a period of three months—of course suspended during the catamenial flow.

For the notes of these cases I am indebted principally to Mr. Brackenbury and Mr. Betts, and for kind assistance in the application of the battery and its arrangement to Mr. Hebbert.

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# THE

# CURE OF SINUSES AND GANGLIA ON THE HANDS AND FEET.

By W. G. SPENCER.

Amongst the out-patients at Westminster during the past year I have seen a number of cases which if treated expectantly, as was formerly the custom, would have attended for a long time without benefit, and in some cases would have got worse. But, on the other hand, by early and active treatment, the patients have been quickly cured. Such cases as described below have been classed before now among the chronic and incurable of surgical out-patients.

The sinuses have been chiefly in children following on some trifling injury. An abscess has formed and burst, leaving a sinus with bare bone at the bottom. At first the disease is one of chronic inflammation, and under good hygienic conditions might heal. But in the children with which we have to do, the longer the sinus remains the greater is the tendency to tubercular changes. And when tubercular disease has begun it may spread widely in the tarsus or carpus, and so cause the loss ultimately of a hand or foot.

The ganglia which have come under my notice have arisen in connection with the patients' work, either from the exces-



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sive and unaccustomed use of some particular muscle, or by constant rubbing or pressure on some tendon. The acute but localised synovitis stops the patient from work by the pain, but when all pain has gone and the ganglion only remains, yet a peculiar weakness is experienced, which still prevents him from following his occupation. And this loss of power does not seem to be sufficiently explained by a slight displacement of the tendon from its sheath. And if the patient can use his hand he cannot work so skilfully as before, and gets less pay. The longer a ganglion remains the more likely is a tubercular process to be set up in it, and the change which ensues in its lining membrane may be similar to that which takes place in joints, and the contents may become caseous or calcareous in character.

So that both the sinuses and the ganglia may be placed together in the tendency of a simple inflammation to pass over into a tuberculous process.

Further, the treatment has been the same, viz. the removal of the disease with antiseptic care, so as to exclude any subsequent inflammation. For after that a sinus has been scraped, and all the disease removed, yet if the cavity left suppurated, the tubercular disease might again start in the surrounding tissues. And if after removing a ganglion the wound suppurated, the inflammation would be in danger of extending up the tendon-sheath, and more or less adhesion result.

### *Cases of Sinuses.*

A boy of two years had a sinus on the inner side of the foot which led down to a carious internal cuneiform bone, and another sinus reaching to the middle cuneiform. The carious bone was scraped away with a sharp spoon, until a cavity about one inch in diameter was made, so that most of the internal and middle cuneiform, and a little bone from the external cuneiform and the anterior and inner angle of the cuboid was removed. The cavity was sponged out well with 5 per cent. carbolic acid, and then filled with boric acid powder. The dressing was applied before the removal

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of Esmarch's band. The dressing was changed after ten days, and the cavity was seen to have become filled up by a firm exudation of fibrin and leucocytes level with the skin. Under another dressing of the same kind healing took place with the formation of a firm scar. If some dressing is used which has to be frequently changed, it is most difficult to avoid suppuration from the exposure.

A girl of five had a sinus on the dorsum of the carpus in which a cavity, three quarters of an inch in diameter, was left after scraping away the carious bone, and which extended through the whole thickness of the carpus. It healed soundly under the same treatment as in the previous case, and I have seen her on several occasions, with the hand quite well.

One of the worst cases was in a boy of two, who was in a most wretchedly neglected and half-starved state. He had on the dorsum of the fifth metacarpal of one hand a sinus with carious bone. Over the other fifth metacarpal was a cold swelling like a ganglion in the sheath of the extensor tendon, which was found to have arisen from carious disease of the fifth metacarpal, and the extension into the tendon-sheath. He had also a cold abscess in the subcutaneous tissue of the thigh. All three places were scraped and dressed; sound healing followed under the antiseptic dressings, and the child's health improved.

A pale, thin, light-haired man of thirty had slightly hurt the metacarpophalangeal joint of the right index finger. When seen, a sinus extended into the joint and the end of either bone was carious. The head of the second metacarpal and the base of the phalanx were scraped, and healing took place with movement, so that when last seen he could use his finger at his work.

One of the latest cases was a boy of thirteen, with a sinus of the right foot leading into the metacarpophalangeal joint of the great toe. On the surface it appeared a very small sinus. But when the carious bone was scraped, a cavity was found in the base of the first phalanx into which the end of the little finger could be passed, and also the same condition in the head of the first metacarpal bone. This also has healed soundly, but if it had not been so treated, how insidiously would the disease have progressed.

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A boy of thirteen came with an abscess on the heel, apparently from the rubbing of the boot. I opened the abscess and found a sinus extending to the os calcis. The sinus showed no sign of healing, and in my absence it was scraped by Mr. Macnamara who removed some carious bone from the os calcis. I have seen the boy since with the heel quite sound.

Besides these cases, small sinuses on the fingers of children extending to bare bone are also very frequent, and if treated as has been described heal at once, and the child is spared the loss or deformity.

In the cases with ganglia which I have had to treat, the patients were prevented from following their work, and as a result of the treatment they have been able to return to it.

A man, aged twenty-five, had sprained his right wrist about nine months before. After a period of rest he tried to work, but a swelling appeared on the dorsum of the hand, and he lost all strength in his wrist. In spite of a long rest the swelling had increased. On the middle of the dorsum of the right hand there was a swelling about one inch in diameter in connection with the extensor tendon, of a consistence apparently partly fluid and partly solid. An incision was made into the swelling under all antiseptic precautions, and in the sheath of the tendon were two small masses, the largest the size of the top of the little finger, adherent to the sheath of the tendon, and having origin from the organisation of blood-clot which had probably been effused at the time of the sprain. Also the distended synovial membrane forming the lining wall of the cavity in which were the tumours, was covered with small villous projections. These were all removed. A small drainage-tube was put in, and when the patient left the hospital at the end of the week, the opening in which the drainage-tube had been was not closed. The next few days happened to be exceedingly cold, and he reappeared with an erythematous condition of the skin around. But the inflammation did not extend to the tendon-sheath, and he was afterwards seen, having recovered the former strength at his wrist, and having returned to his occupation. But in subsequent cases I have not inserted a drainage-tube.

A boy of twelve during his work got an acute tenosynovitis

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in the sheath of the flexor carpi ulnaris immediately above the wrist. I treated him, and when the inflammation passed off the sheath of the tendon was distended by fluid in which the presence of melon-seed bodies could be felt. Furthermore the ganglion rather increased and extended under the annular ligament so that fluctuation began to be felt in the palm, and there was every probability that a compound palmar ganglion would form. I made a longitudinal incision into the swelling under antiseptics, and besides the fluid about two drachms of melon-seed bodies came out. The sac was washed out, and then the incision closed exactly with horsehair which passed through both skin and the synovial membrane lining the sac, without the use of a drainage-tube. The wound healed under the first dressing and he regained full use of the hand.

Another boy of the same age had a ganglion in the extensor tendon on the dorsum of the right hand. It was punctured and injected with iodine but did not disappear. He allowed me to inject cocain ($\frac{1}{2}$ gr. in a 5 per cent. solution) and then the ganglion was laid open and its walls scraped. Healing followed, and with full movement.

A domestic servant injured the first phalanx of the right index finger. She came with thickening about the first phalanx as of periostitis, and there was a chronic effusion into the sheath of the flexor tendons. She was treated for some weeks but without change, and she could not return to her situation. I made an incision on the palmar surface along the first phalanx and opened the sheath of the flexors. There was some fluid in it, and when the tendons were slightly drawn aside by a blunt hook, there appeared underneath the flexor profundus, between it and the bone, two small bodies, each the size of a pea. The incision was exactly united and was found to have healed when the first dressing was changed at the end of ten days. And the finger could be moved freely. I could find no other cause for the thickening about the bone, and it appeared to pass away after the operation. The woman went back to her work.

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# AN EXERCISE IN FORENSIC MEDICINE.

## PART II.

By CHARLES A. HEBBERT.

In the last volume of Reports I was able to give a description of two cases of mutilation which occurred during 1887 and 1888. I now take the opportunity of recounting two more instances of mutilation which have happened during the present year. In almost every respect they are similar to the first two cases, and appear to belong to a series of murders and dismemberment by the same hand. The chief point of interest is that in the third case the victim was identified, and the deductions as to sex, age, height, &c., argued from the anatomical examination, proved correct, and it may be fairly claimed that the identification was in great measure due to the description given by these means.

In the other cases so far no identification has been possible, but the cases taken as a whole are valuable as illustrating the difficulties we labour under in describing a person from such imperfect data, and as showing how a skilful, determined individual can murder and dispose of four bodies without detection.

In the first and third cases the whole body was discovered except the head, and in both most of the pieces had been thrown into the river or canal. In number two the piece found first was the arm and was in the river, and after that only the trunk and leg, both having been deposited under cover on the earth. In number four only the trunk with the

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arms attached was discovered, and this again was on the earth under cover.

In many of the portions decomposition had very far advanced, and the various kinds of decomposition occurring in water, after burial, and when exposed to the air on dry ground were well shown. The mode of dismemberment and mutilation was in all similar, and showed very considerable skill in execution, and it is a fair presumption from the facts, that the same man committed all the four murders. In the first two cases the vertebræ had been sawn through, in the third the sixth cervical vertebra was sawn through, but the dorsal and lumbar vertebræ were separated by cutting through the intervertebral substance, and in the fourth the intervertebral substance in the neck was cut, showing that the man was aware of the projecting anterior lip on the under surface of the vertebra, and suggesting that he was becoming more expert in his work, at the same time indicating that he was not necessarily a good anatomist, but rather a man accustomed to cut up bodies quickly in somewhat large pieces.

The third case is that known as the Thames case.

The parts found were: (1) two large flaps of skin, the uterus, and placenta; (2) both arms and hands; (3) both thighs; (4) both legs and feet; (5) the trunk divided into three parts.

*The trunk.*—The first portion of the trunk included the shoulders and the upper part of the back, the head and neck had been taken off opposite the sixth cervical vertebra, the skin, muscles, and vessels were divided cleanly by a series of cuts; the cricoid cartilage was cut through, and the body of the sixth cervical vertebra divided through the centre, showing a flat and somewhat rough surface. The edges of the skin and the section of the vessels were sharply defined. This part was separated from the trunk below at the junction of the seventh and eighth dorsal vertebræ.

The chest had been opened in front by the mid-line. The upper part of the sternum cut through, and the contents of the chest had been removed.

Both arms had been taken off opposite the shoulder-joints by three or four long, sweeping cuts, the joints neatly disarticulated. Decomposition had not far advanced, the skin

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was white and sodden, the epidermis peeling off in places. The second portion of the trunk included both breasts and the upper part of the abdomen as far as the intervertebral substance between the third and fourth lumbar vertebræ. The upper surface of this portion exactly fitted the lower surface of the former part. It had also been opened down the centre of the sternum.

The ribs from the fourth downwards were present, the lower border showed a clearly defined skin margin from the back at the junction of the third and fourth lumbar vertebræ to a point an inch and a half above the umbilicus on the left side, and a point just below the umbilicus on the right side.

The intestines had been removed, but the duodenum and a piece of the stomach remained. There were also present both kidneys, the spleen, pancreas, and liver. The breasts were firm and compact, and enlarged; the areolæ well marked, and follicles distinct. All the organs found were healthy. The liver was much decomposed.

The third portion of the trunk consisted of the pelvis from below the third lumbar vertebra. The thighs had been taken off opposite the hip-joints by long sweeping incisions through the skin, muscles, and tissues down to the joint, the heads of the bones neatly disarticulated. The incisions separating both the arms from the upper piece, and the thighs from the lower piece, were exactly opposite the flexure of the joints. The pelvis contained the lower part of the vagina and the lower part of the rectum, the front part of the bladder including the urethra. The vagina was flaccid, the mucous membrane healthy, and still showing rugæ. There was no rupture of the vaginal walls or fourchette, nor was there any swelling nor congestion of the parts.

The flaps of skin and subcutaneous tissues consisted of two long, irregular slips taken from the abdominal walls. The left piece included the umbilicus, the greater part of the mons Veneris, the left labium majus and labium minus. The right piece included the rest of the mons Veneris, the right labium majus and minus, and part of the skin of the right buttock. These flaps accurately fitted together in the mid-line, and laterally corresponded to the incisions in the two lower pieces of the trunk. The skin was fair, and the

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mons Veneris was covered with light sandy hair. There were no appearances of lineæ albæ. The upper part of the vagina was attached to the uterus, both ovaries and broad ligaments were present, and the posterior wall of the bladder. The uterus had been opened on the left side by a vertical cut, 6 inches long, through the left wall. The organ was much dilated, the vessels on the inner surface large and open, and the mucous membrane swollen and softened. The uterus measured 10 inches long by 7½ inches wide. The circumference of the os externum was 4 inches. The length of the cervix from the os externum to the os internum was ¾ inch. Inside the uterus were the placenta, cord, and membranes. The cord measured 8 inches, and the distal ends showed a clean cut. The vessels contained fluid blood. The placenta was circular, and measured 6½ inches in diameter. The ovaries were irregular and shrivelled, the right containing a cyst.

*The arms.*—The arms had been removed from the trunk at the shoulder-joint; when the upper ends of the arms were placed against the shoulders of the trunk it was found that the joint surfaces corresponded, and that the margins of the skin accurately fitted; the two limbs were identical in appearance and measurements. The skin of the hands was white and much corrugated, and the epidermis peeling off; the nails were still adherent. The nails were short, the edge much below the tip of the finger, with an irregular outline. There was no thickening of the skin of the palm or fingers. The hair in the armpit was similar in colour to that on the pubes. On the upper and outer side of the left arm were four round superficial cicatrices. On the back of the left ring finger was a small discoloration, ¼ inch broad; this, when cut into, showed extravasation of blood in the tissues. On the inner side of the left forearm, about 1 inch above the wrist, there was an irregular, white, hard cicatrix 1 inch long and ¼ inch wide. There was a small bruise over the internal condyle of the left arm, and another one just below the right internal condyle.

*Measurements.*—Whole length of arm and hand 26⅞ inches. From the elbow to tip of middle finger 16½ inches. Length of middle finger 3¼ inches. Length of hand 6¾ inches; breadth

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of hand, 3¼ inches. Circumference of wrist 5⅜ inches. Circumference of palm 7 inches. Humerus, great trochanter, and external condyle, 10¾ inches. Head, to internal condyle, 11¼ inches. Ulna, to styloid process, 9¼ inches.

*Lower extremities.*—Thighs: On placing the upper ends of the thighs to the hip-joints of the pelvis, the heads of the femora exactly fitted the cotyloid cavities, and the margins of the skin corresponded. The legs had been removed at the knee-joint, the left thigh having the patella attached, and also the semilunar cartilages. The length of the femur from the head to the internal condyle was 17 inches. The circumference at the knee-joint 13 inches, and the maximum circumference 19½ inches. At the inner side of the upper part of the thigh were some light sandy hairs similar in colour to those on the pubes. The skin was fair, not decomposed, and the tissues were fresh. The right thigh exactly resembled both in measurements and condition the left.

Legs: On placing the lower end of the thighs against the upper ends of the legs, the joint surfaces and the cuts in the skin were found to fit. The leg and foot measured 16½ inches. The tibia was 13½ inches long, fibula 13 inches long, foot 9½ inches long. The circumference of the left calf = 13⅜ inches, of the right 13⅞ inches. There was no deformity of the toes, and the feet were well shaped. The whole length of the lower extremities = 32⅞ inches.

*Epiphyses.*—The sternal ends of the clavicle had recently joined, but the line of the union was still evident, the tips of the acromial processes of the scapulæ had not joined the spine. The upper ends of the fibulæ had firmly united.

The following inferences were then drawn from the foregoing facts.

*Sex.*—The sex was female. The uterus was that of a pregnant woman, and the size of the uterus as well as that of the placenta would indicate that the pregnancy had advanced to between six and seven months. The measurement and appearance of the os and the length of the cervix showed that delivery had not taken place, but the fœtus had evidently been removed through the incision in the left walls of the womb. The condition of the vagina and the non-rupture of the fourchette confirmed this view.

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*Age.*—The complete union of the epiphyses of the fibulæ proved her age to be over twenty-four years, while the not complete union of the acromial processes and the sternal ends of the clavicle showed she was under twenty-five. The complexion was fair, as shown by the hair.

*Height.*—Twice the length of the whole lower extremities $= 65\frac{3}{4}$ inches. The length of the forearm $16\frac{3}{4} \times \frac{19}{5} = 63\frac{13}{20}$. Length of middle finger $3\frac{1}{3} \times 19 = 63\frac{1}{3}$ inches. Twice the length of the arm $= 53\frac{3}{4} + 11$ inches for the clavicles and sternum $= 64\frac{3}{4}$ inches.

*Incisions.*—The surfaces of the vertebræ are such as would be made by a fine-toothed saw. The clean edge of the skin incisions showed that a very sharp knife had been used. The joints in each case, with the exception of the left knee, were exactly opened, and the limbs neatly disarticulated. In the case of the left knee the semilunar cartilages were attached to the ends of the femur.

*Condition of life.*—There was no thickening of any portion of the skin of the hands which would suggest any special occupation. The bruise on the back of the left ring finger might have been made by the forcible removal of a ring. There was no mark either on the thighs or the legs as is made by the pressure of a garter. It was clear from the direction and manner of the cuts that no ordinary surgical or dissecting-room operation had been carried out, but the system of division of the parts gave evidence of design and skill,—the design probably being for the purpose of concealment of the crime and easy carriage of the parts; the skill not showing the anatomical knowledge of a surgeon, but rather the aptitude learnt by a butcher, horse-knacker, or other person used to deal with dead animals and to readily separate limbs at the joints.

All the parts evidently belonged to the same body. The state of decomposition of the various pieces is consistent with the theory that death took place about twenty-four hours before the discovery of the first two portions.

*Summary.*—The summary was that the remains were those of an adult female of fair complexion, with light sandy hair, well formed and well nourished, from twenty-four to twenty-five years old, and about 5 ft. 4 in. in height; that she was

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pregnant of about six to seven months' duration; that she was undelivered when death took place, and that the fœtus had been removed by an incision through the walls of the uterus after death; that the mutilations were carried out after death by some person with a considerable technical knowledge of the speediest mode of cutting up animals; that decomposition had taken place, partly in water and partly in the air; and that death occurred about twenty-four hours before the first discovery. That an injury had been suffered to the left forearm which left a permanent cicatrix.

The great interest in this case was that the foregoing inferences were verified by the identification of the woman. She was proved to be an unfortunate, named Elizabeth Jackson, who was in her twenty-fifth year, measured 5 ft. 4½ in. in height, and was known to be far gone in pregnancy.

The verification of the remains was confirmed by the cicatrix on the left wrist, which was caused by a fall on a broken bottle some years previously. She was last seen two days before the discovery of the remains.

With regard to the height, the various calculations do not exactly correspond, but the average of the four would give a little over 64¼ inches, so that the inference was very near the exact truth.

There was no evidence as to the cause of death.

Note by Mr. Bond.—*In most of the recorded cases it has happened that, in investigations as to identity of a mutilated body or part of a body, great uncertainty remains as to the height. This case is remarkable from the fact that, beginning with one limb only, the other parts of the body were found. The adoption of four different methods was pursued in estimating the height. Each method gave a result within an inch; and then, taking the mean of the four measurements, we arrived at the actual height as described by the persons who identified the body.*

The fourth case was that of a trunk found under an archway in Whitechapel, and on September 11th, 1889, I was present at the post-mortem examination, and made the following report to the police.

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The remains consisted of the trunk and arms of a female body. The head had been cut off at the lower part of the neck, and the thighs had been separated at the hip-joints.

The trunk was plump and well formed, with full breasts, fair skin, and dark brown hair on the pubes and axillæ; the arms well shaped, hands small, and nails well kept. The weight of the trunk could not be taken. The length was 26 inches, and circumference of chest at nipple-line 34 inches, and below breasts 31¾ inches.

Rigor mortis had passed off, and decomposition, as shown by green discoloration of the abdomen just beginning, The cut surfaces at the hips were black and dry, but the surface at the neck moist and red. The skin and muscles of the abdomen had been cut by a vertical incision, running from 2 inches below the ensiform cartilage downwards, and ending on the left side of the external genitals, just opening the vagina, but not opening the peritoneal cavity. There were a number of small round bruises on the forearms and arms, most on the inner surface of the forearms, and varying in size from a shilling to a sixpence. On the left wrist were two cuts, one just grazing the skin, ¾ inch long, and the other cutting through the skin, and 1 inch long. There was no ecchymosis on the edges, and no gaping of the wounds. There are no lineæ albæ on the abdomen, and no further scars or injuries.

The incisions separating the head were apparently two in number; the first beginning behind, opposite the spinal column, and ending in front on the right side, and carried from left to right; the second beginning on right side in front and carried to back, joining the first, but leaving a tongue of skin behind. There was no ecchymosis in the skin. The muscles and tissues down to the spinal column were cut on the same level, the cricoid cartilage being cut about the centre. The spinal column was divided at the junction of the fifth and sixth cervical vertebræ, through the intervertebral substance, just a thin shaving of the body of the fifth cervical vertebra being left. The ends of the vessels were very clean cut. There was no retraction of the muscles or other tissues.

The thighs had been separated at the hip-joints, the skin

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cut through by two or three sweeping, circular incisions, beginning apparently just below the hip-bone, and carried downwards and inwards round the buttock. The capsules of the hip-joints were opened, and the heads of the bones neatly disarticulated.

There was no retraction of the muscles and tissues, and the incisions, both at the hip and neck and in the abdomen, had very clear-cut edges.

The internal viscera were then examined.

*Heart.*—The walls were flaccid, the ventricles empty and dilated; the valves healthy and competent, the muscle pale and fatty. On the pericardium was a patch of old inflammation. Weight 9½ oz.

*Lungs.*—Right upper lobe adherent to pleura by old firm adhesions. Left lung free. Both lungs were apparently healthy, but were beginning to decompose.

*Spleen* large, soft, decomposing, 7½ oz.

*Liver.*—Weight 50 oz., decomposing, substance fairly healthy.

*Kidneys.*—Weight 7 oz. each; slight decomposition, substance fairly healthy.

*Stomach.*—Walls normal, with healthy mucous membrane. About a dram or so of partly digested food, which appeared to be plums; there was no odour of the contents.

*Intestine.*—The large intestine contained fæces. There was no abnormality in either large or small gut.

*Vulva.*—The vulva is patent, and there is no hymen. The fourchette is unruptured. The vagina is wide, but still rugose. The mucous membrane is healthy.

The *uterus* weighs rather less than 2 oz., and is 3 inches long, of which the body measures 1½ inches, the cervix 1½ inches. The cavity of the body is triangular, with a convexity downwards at the base. The cervix has well-marked ardor vitæ. The os is small, and the lips are not everted. The os just admits a large probe. There is a little whitish thick mucus oozing from the os uteri. The mucous membrane is rather thick, and covered with a reddish mucus.

The ovaries are small, cystic, and degenerating. There is a small extravasation of blood in the left ovary.

The measurement of the arms *outstretched* across the chest

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= 64 inches. The forearm measured 16½ inches, the hand 6½ inches long and 6⅞ inches in circumference at the palm.

On the first joint of the dorsal surface of the right little finger is a small round hardening, not amounting to a corn, and a similar but smaller hardening on the inner side of the back of the first joint of the right ring finger.

The sternal epiphysis of the clavicle had united by bone.

The tissues generally were pale and bloodless.

COMMENT.—The remains are those of a large well-nourished woman.

*Her height,* as calculated by the transverse measurements and forearm, about 5 feet 3⅓ inches. The length of the forearm was 16½ inches, and this multiplied by $\frac{12}{5} = 62\frac{7}{10}$ inches; the transverse measurement of outstretched arms = 64 inches, so that the mean = 63⅓.

*Her age* is above twenty-five, as shown by the union of the epiphyses. The presence of a small extravasation of blood in the ovary showed that she had not reached the menopause, but we could not calculate her age more accurately than to say she was over twenty-five and under forty years old.

*She had not borne children,* as shown by the uterus and absence of lineæ albæ, and the breasts did not give the impression of having been used for suckling.

*She was apparently not a virgin,* and the vagina had been distended, though not so patent as after child-bearing. The skin is fair and the hair dark brown. The hands are shapely and the skin soft. There are no marks indicating any occupation, except that on the right little finger is a small circular hardening, but no corn. This mark is such as might be made by writing. There is no mark as of a ring worn on the left ring finger.

The immediate cause of death was syncope as shown by the condition of the heart, and the general bloodlessness of the tissues would indicate hæmorrhage as the cause of the syncope.

There was *no organic disease* of the viscera examined which would have caused death.

The edges of the cuts showed that *a very sharp knife* had been used; all the cuts had been *made after death.*

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All the cuts were made from left to right except those separating the right thigh and right arm, which had been carried from right to left across the flexures of the joints, and so probably done by a right-handed man.

The incisions were evidently made with design and were skilfully performed, as by a man who had some knowledge of the position of joints and the readiest means of separating limbs—such knowledge as a butcher or slaughterer would possess. They do not indicate a special anatomical knowledge of the human body.

I have again to thank Mr. Bond for his kind permission to make use of these cases.



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# NOTES

ON

# GONORRHŒAL RHEUMATISM.

By THOMAS BOND.

Twenty-five years ago this disease was scarcely recognised, and little understood even by distinguished pathologists. I remember taking a very obstinate case to Sir James Paget (then Mr. Paget) for consultation and advice. I asked him his opinion as to the pathology of the disease. His answer was, "I really don't know, but I do know that you must cure the discharge before you can cure the disease." This answer set me thinking, and in 1872 I read a paper on gonorrhœal rheumatism at the Medical Society of London, advocating the septic theory of the disease, and comparing it to a low or subacute form of pyæmia. I was severely handled, in the discussion that followed, by several of the leading physicians and surgeons of the day. They ridiculed the idea that the disease was anything more than a phase of the gouty or rheumatic diathesis. In fact, they said that it was ordinary gout or rheumatic gout which was already in the system, and that it was only an accidental complication of the gonorrhœal discharge, and not in any way dependent on it. I did my little best to hold my own, and quoted Mr. Paget's words that the disease appeared to be dependent on the discharge, and that it could only be cured by treating

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the gonorrhœa. Since then I have had unusual opportunity of studying this disease, both in the Lock wards of a large hospital and in the out-patient department of our own hospital. But I have always been met by one great drawback in accurately investigating the pathology of the disease, and that is that the patients rarely die of it—at least, it has never so happened in my experience, therefore I have never had an opportunity of making a post-mortem examination where the disease was present. It is, however, now a generally accepted theory that gonorrhœal rheumatism is a septic disease. It might, perhaps, be better named septicæmic rheumatism. It occurs generally in men, but may also occur in women, especially in those anæmic or chlorotic women who are most subject to leucorrhœal discharges. I have noticed in men that it never occurs during the early stage of the disease, or when the anterior portion of the urethral canal is alone affected. Again, it never attacks women while the discharge is confined to the vaginal mucous membrane, and it is by no means common in women. When it does occur in women, it is caused either by chronic uterine catarrh or from cystitis.

In men the septic infection appears to take place through the prostatic veins, for, as far as my experience goes, the rheumatism never comes on till the urethral inflammation has reached the prostate. I consider the direct cause of infection to be a phlebitis of the prostatic veins, rather than any inflammation of the lymphatics; for it is very common for the lymphatics to be affected in the earlier stages of gonorrhœa, and we do not find that it is followed by any symptoms of gonorrhœal rheumatism. Again, in nearly every case of gonorrhœal rheumatism there is undoubted obstruction of the prostatic urethra, causing frequent and difficult micturition. Cystitis is also a common complication; and even after the rheumatism is cured there is a certain amount of swelling and turgescence remaining about the prostate, and the stream of urine is not so good as before the disease.

Again, every recurring attack of gonorrhœa is sure to bring on a return of the rheumatism. This is just what we might expect in a thickened and varicose condition of the prostatic veins; the same thing occurs in phlebitis of the veins of the legs. The inflammation resolves itself; the

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veins remain thickened and tortuous, but any extra exertion or inflammatory illness will bring on a return of the inflammation.

During an attack of gonorrhœal rheumatism the prostatic urethra is intensely sensitive and vascular; and when catheterisation is resorted to, however carefully, there is often severe hæmorrhage and always great pain.

The mucous membrane feels rough and varicosed, and no doubt the enlarged veins are easily punctured if great care be not taken. There is a certain variety of gonorrhœal rheumatism which comes on during the acute stage of gonorrhœa.

This attacks the patient very suddenly, causing intense pain of one particular joint, generally the wrist or elbow joint. It is accompanied by great febrile disturbance, foul tongue, sudden suppression of the secretions, shivering, flushing of the face, high temperature, and, in fact, exactly like an attack of pyæmia after an operation. In the great majority of cases, however, the rheumatism does not come on until a month or six weeks after the commencement of the gonorrhœal discharge, and when the inflammation has become subacute. In this stage the discharge is thin and glairy and often very scanty, the urethral scalding having disappeared, though great discomfort remains around the prostate and bladder. The first thing that is felt is usually some tenderness of the heels in walking; then the ankle or knee joints become stiff and painful and swollen. The swelling of the knee-joint is peculiar and almost diagnostic, the effusion being most marked in the upper part of the joints under the vasti muscles; the synovial membrane of the joint appears to be not so much affected as its extension upwards, where it lines the fibrous sheaths of the muscles. The wrist-joints follow in succession, but it is rare to find all the joints affected at once. Gradually the rheumatism invades the whole system, pain is felt in the limbs as well as in the affected joints; the pain in the muscles of the back and chest becomes very acute, especially in the early morning after sleep, and after four or five o'clock in the morning the pain is so great that sleep is impossible. The patient loses flesh and becomes hectic and feverish, the temperature keeps about 100°, the

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tongue is red and dry, the urine scanty and high-coloured, and the bowels confined.

In some cases small abscesses form around the joints and in the sheaths of the tendons; they are cold, slow-forming abscesses, and not very painful, but when opened they exude very dark-coloured thin sanguineous pus, and they heal very slowly. I have never seen suppuration of a joint occur, but it has happened in neglected cases. The inflammation of the joint is apt to become very chronic, and to extend to the fascia and ligaments; this often produces great contraction and deformity of the joints, the knee and wrist-joints being most commonly affected in this way: the fingers and knuckle-joints become affected in the same way. Another common complication is inflammation of the sclerotic covering of the eyeball, which may go on to severe conjunctivitis, and in some cases iritis follows.

The course of gonorrhœal rheumatism is slow and tedious, often disabling the patient for twelve months or even more, and unless great care be taken leads to severe contractions and permanent stiffness of the joints; even when recovery takes place without leaving any deformity or stiffness, there is great weakness of the legs and arms, the muscles become extremely atrophied, and in the foot especially the weakness is felt, the tarsal arch often gives way, and flat-foot of a particularly painful kind is produced.

In the treatment of this disease alkalies and iodides are absolutely useless as curative agents; no doubt these medicines give relief to symptoms by allaying pain and relieving nervous tension, but they do not touch the origin of the disease. The treatment which I have always adopted and have generally found successful is as follows.

First, treatment of the urethral discharge. Second, treatment of the blood disease on the principle of retarding the proliferation of the bacillus poison. Third, the local treatment of the inflamed joints. Fourth, surgical applications to prevent deformity or stiffness, and adhesions of the joints. Fifth, treatment of the atrophied muscles and weakened ligaments.

For the urethral discharge sedative injections are by far the best. The following is a good prescription.

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℞ Ext. Belladonnæ ʒj,
Mucil. Acaciæ ʒj,
Aquæ ad ʒvj.
M. ft. inject. To be used after each micturition with a half-ounce syringe.

The patient should lie on his back with the legs drawn up, and spread open in order to relax the perineal muscles as much as possible, as it is important that the injection should be slowly forced into the prostatic urethra; it should be kept in three or four minutes and then allowed gradually to dribble out, thereby leaving the urethral mucous membrane coated with the gum and belladonna deposit.

In the chronic gleety discharges I use a warm and weak solution of Hyd. Perchlor., strength 1 in 2000, and sometimes I change it for a weak solution of Condy's fluid. Catheterisation or cauterising or strong stimulating injections rarely do good, but when the gleet is complicated with stricture I use a soft bougie dipped in the belladonna injection, or smeared with a paint composed of equal parts of Pil. Hyd. and glycerine. This should be used every night at bedtime, as shivering not unfrequently follows. Medicated bougies may be used, provided they reach to the prostatic urethra. Copaiba or cubebs appear to have little effect on the discharge, and those drugs are not well borne in severe cases of gonorrhœal rheumatism.

The general treatment is a very generous but light diet. I give milk and eggs in abundance, also beef tea and chicken, mutton and game. I avoid all starchy, saccharine, or fatty food, with the exception of scalded cream, and also alcohol in every form. Green vegetables and fruit I give freely. Of medicines I prefer quinine in the solid form, iron = Ferrum Redactum, Liq. Arsenicalis, 5-minim doses, or Bourboule water. Sometimes I find half-drachm doses of Liq. Hyd. Bichlor. very efficacious; it may be combined with iron, strychnine, or quinine, and given after meals. Vichy water, St. Louis water or the Bath waters should be given to act on the kidneys if necessary. Æsculap or Hunyadi Janos water may be given for constipation, and an occasional dose of calomel is very desirable. When there is much pain and nervous tension the following pill if given at night produces great relief:

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℞ Calomel gr. j,
Ext. Aconite gr. j.
M. ft. pil.

For the early treatment of the inflamed joint I prefer the application of extract of belladonna and glycerine, equal parts to be smeared over the joints, and covered with cotton wool and lightly bandaged.

For the chronic subacute swelling I use sulphur poultices. Equal parts of Sulph. Precip., crushed linseed, to be mixed when dry and made into large poultices in the usual way. These should be kept constantly applied, and only changed night and morning; a large quantity of sulphur is absorbed into the blood. This is a combination of local and constitutional treatment which I find highly successful.

The surgical treatment consists of suitable splints to ensure rest and position. The limbs should always be kept straight, as contraction of the flexor tendons is to be most feared. After a time massage and the Aix douche is most desirable. When there is great swelling and effusion in the joints, a course of blistering with a strong solution of iodine is very efficacious. Where there is a tendency to stiffening of the joints, passive motion should be combined with massage. Lastly, for the atrophy of muscles, salt water douches, massage, and electricity will effect a cure, but the weakness of the plantar arch may resist this treatment for months or years. In such cases I apply the actual cautery severely over the internal lateral ligaments and inner side of plantar fascia, in the way I advocate for the treatment of congenital flat-foot.

In conclusion my experience leads me to the opinion that gonorrhœal rheumatism is essentially a curable disease, but that it is liable to return on small provocation. The passing of a catheter, a slight urethritis, or even the discharge from an herpetic eruption on the prepuce may set up a urethral discharge which will reproduce the disease.

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# REMARKS

ON THE OPERATION OF

# TRACHEOTOMY IN CHILDREN.

By J. W. BATTERHAM.

"I THINK," writes Professor Billroth in his 'Clinical Surgery,' "that tracheotomies in children are the most difficult operations I have ever performed." In the face of this deliberate expression of opinion a young house surgeon or practitioner may look forward with excusable anxiety to the moment when he will be called upon to perform his first tracheotomy. Nor will the possession of the newest tracheotome, or a set of intubation tubes, or the knowledge that some surgeon has demonstrated with what facility the operation may be performed with a Paquelin's cautery, go far to reassure him when he reflects that these "aids to surgery," though at ready command of the house surgeon of a public hospital, may not be at the hand of the young practitioner when he most requires them; and that whilst he has to face the emergency with full equipment and assistance in the one case, he may in the other be suddenly required to face it with no other instruments than the contents of his pocket case, without skilled assistance, and with no better means of illumination than a candle or hand-lamp.

The first requisite in this as in other surgical emergencies

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is presence of mind, to the attainment of which nothing is more conducive than a clear idea of the steps of the operation, its possible difficulties, and the methods of meeting them.

Prompt action is most desirable. Delay renders the performance of the operation more difficult because necessarily more hurried, and lessens the patient's chances of recovery. In case of sudden total obstruction to the entrance of air into the windpipe, there can be no room for doubt as to the immediate necessity of tracheotomy. When œdema glottidis, membranous laryngitis, or some other form of gradually increasing obstruction is the cause of dyspnœa, the question may arise as to the proper time for operative interference. In such cases, if there is aphonia, and inspiration is accompanied by marked recession of the soft part of the chest, tracheotomy is undoubtedly called for.

When in addition to these symptoms the lips become livid, and the complexion assumes an ashy grey hue, the operation is urgently required. It may be undertaken even with some hope of success so long as the heart is beating, although respiratory efforts appear to have ceased.

Unless the patient is comatose assistance of some kind is absolutely necessary. Indeed, in the absence of *any* assistance it would be safer to defer the operation till the patient is moribund than to attempt it with the patient struggling and writhing under the knife. Two assistants are generally required, and a third is by no means unwelcome.

Operation being determined upon, the neck and shoulders of the patient are to be bared, and the arms pinioned to the sides by a strong towel wrapped round the body and secured with safety pins. The patient should then be placed on a table in the best light obtainable. His head, thrown well back over a small hard pillow (a bottle wrapped in a towel answers admirably), is entrusted to the care of one assistant, while the other controls the feet and hands from the opposite side of the table. If possible chloroform should be administered. A few drops only will be required, and will add greatly to the comfort of the operator without increasing the risk to the patient.

The surgeon should place the instruments, water, sponges (or their substitutes), &c., within easy reach; then, having noticed

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that the patient's head is well extended, and not rotated, and having ascertained with his finger the position of the cricoid cartilage, he will proceed to make the first incision. This should divide skin and superficial fascia exactly in the median line of the neck. Its length may vary from one and a half to two inches, its middle point being at the lower border of the cricoid cartilage or a line or two below it. It sometimes happens that an anterior jugular vein crosses the line of the incision, and being wounded will require double ligature and division.

The deep fascia of the neck is next to be seized with dissecting forceps in the median line between the depressors of the hyoid bone, and carefully scratched through with the point of the scalpel as in opening the sac of a hernia. Division of the fascia to the full extent of the skin wound can then be readily effected with a director or the handle of a scalpel. The assistant to whose care the head has been entrusted can now render further aid by retracting the edges of the wound with blunt hooks, at the same time steadying and extending the head with his wrists, the flexor surfaces of which should be pressed against the sides of the patient's head. Care must be taken to see that traction is exerted *equally* on the two sides of the wound, as the trachea is easily drawn to one side, and unskilled operators have sometimes found themselves entering the œsophagus or scoring the bodies of the vertebræ in their endeavours to reach the trachea.

Retraction of the depressors of the hyoid bone exposes a double layer of thin fascia containing a plexus of turgid veins, by which the upper part of the trachea is covered. Bose has recommended that, in order to best avoid embarrassing hæmorrhage, this fascia be divided transversely at the upper edge of the cricoid cartilage and drawn downwards with a blunt hook, thus exposing the trachea and protecting the veins of the thyroid isthmus from injury. I have not always found this method practicable, but in two cases where I adopted it I was gratified to see the rings of the trachea cleanly exposed without the loss of more than a drachm of blood during the whole operation.

If Bose's method is not found easy of performance the fascia over the trachea should be carefully scratched through,

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and the veins separated by a director and held aside by blunt hooks, so as to expose the trachea.

I am convinced that after the skin incision has been made the less the knife is used until the trachea is reached the better. Separation and retraction of veins with blunt instruments is rather tedious, but time is more satisfactorily spent in these processes than in vainly attempting to secure wounded vessels in a small wound perpetually filling with dark blood. Bleeding from these veins usually ceases when the trachea is opened, still it renders the opening of the trachea and insertion of the tube a little difficult by hiding the parts from view, and is better avoided if possible.

The first three or four rings of the trachea *being clearly exposed* must now be divided from below upwards. The fixation of the trachea with a sharp hook is unnecessary. I have, however, found it a great advantage to insert into the upper angle of the tracheal incision, as soon as the scalpel which makes it is withdrawn, a silver director bent into a blunt hook. With this instrument the surgeon can fix and draw forward the trachea with his left hand, while with his right he has no difficulty in passing the outer portion of a "bivalve" tube into place along the groove of the director.

In cases of membranous laryngitis the edges of the tracheal incision should be held apart with dilator or forceps, and any accessible membrane removed before the insertion of the tube.

Mr. Battams, of the East London Children's Hospital, has removed laryngeal membrane by passing into the larynx through the wound and out by the mouth a small gum-elastic catheter, carrying a piece of silk to which a morsel of sponge is attached.

A suitable tape should be fixed to the shield of the tube *before* its introduction into the trachea, a slight movement of the patient during the process of threading the tape through the shield of a tube already *in situ* being liable to cause displacement of the tube.

Entrance of blood into the trachea at this stage of the operation is best met by turning the patient on his face as soon as the tube is introduced.

When the trachea is opened and air rushes into the lungs the patient sometimes ceases to breathe, and his face presents

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an alarming pallor. Respiration and circulation, however, generally become normal after thirty or forty seconds. Nature may, if necessary, be assisted by lowering the patient's head, moistening his lips with spirit and water, and performing a few artificial respiratory movements. With the exception of blunt hooks and a tracheotomy tube, no instruments are required for this operation which a surgeon will not generally carry in his pocket case.

A trachea dilator, though very useful, is not indispensable. Its place may be roughly taken by a pair of dressing forceps.

Blunt hooks may be extemporised of spare probes or directors, but a *hair-pin* with its closed end bent to an angle of about 70°, and its open end lashed with ligature silk to a penholder in which grooves have been cut to receive it, makes, perhaps, a more efficient instrument.

Nor, with such homely material at our disposal, need we be at a loss for a temporary substitute for a tube. In my last case of tracheotomy I fashioned a "tube" out of a hair-pin a little longer than its fellows by just bending it to a suitable curve, then bending outwards in opposite directions three-quarters of an inch of the free extremities of the pin, and finally twisting these extremities by the help of a dressing forceps into loops for the attachment of tapes. It answered its purpose admirably. It was easily inserted, the closed end of the hair-pin being introduced "on the flat," and then rotated so as to open the tracheal incision.

I have since found that the use of a hair-pin for this purpose was suggested by Dr. Henry in the 'British Medical Journal' in 1878. A piece of a soft catheter has often been employed as a tracheotomy tube, and makes a fairly efficient substitute.

I would, in conclusion, lay down as the best maxims for the tracheotomist—

1. Operate early.
2. Avoid all hurry.
3. Use the scalpel sparingly.
4. Arrest all bleeding before opening the trachea.

The first it is not always in our power to observe. The second and third we can always follow, and by attention to them we may have no necessity to act upon the fourth.

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# REPORTS OF SPECIAL CASES.

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# THREE CASES

OF

# ABNORMALITY OF THE HEART,

## AND IN ONE, OF THE GREAT VESSELS ALSO.

By H. C. DE RENZI.

These cases I have met with during the past year. They are interesting chiefly from an anatomical point of view, although Cases 2 and 3 are also of pathological interest. A case exactly similar to the first has, I believe, not been recorded. Through the kindness of Mr. Hebbert I was permitted to show the specimen at a meeting of the Anatomical Society, and the opinion expressed by the members was that it was unique. The specimen is now in the museum at the School.

The accompanying woodcuts merely illustrate the malformation in each case, the greater portion of the heart being similarly represented in all three.

Case 1. The child from whom this specimen was taken was nine months of age, and under the care of Dr. de Havilland Hall. He had always been very delicate, and was remarkably pale, but contrary to what might be expected from the malformed heart he was not cyanosed.

The post-mortem examination showed slight congestion of



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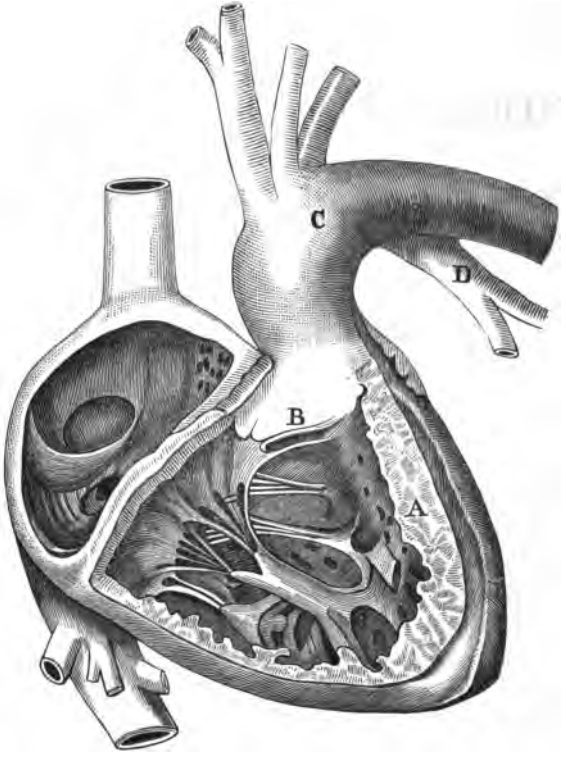
the lungs, and there was a small amount of fluid in the pericardial sac.

The leading features of the case are—

1. Thickness of the muscular wall of the right ventricle as compared with that of the left.

2. The imperfect septum between the ventricles.




A. Thick muscular wall of right ventricle.
B. Point at which the development of the interventricular septum has ceased.
C. Large vessel arising from right ventricle.
D. Pulmonary artery.

3. The origin of a large vessel from the right ventricle, which was continued as the descending thoracic aorta; and

4. This vessel giving off a pulmonary artery.

As to the comparative thickness of the right ventricular wall, this is doubtless to be accounted for by the greater

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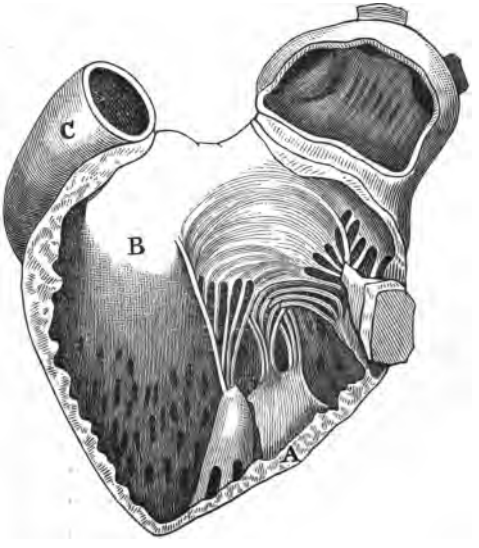
amount of pressure which the ventricle had to overcome, and by the increased amount of blood which it had to propel; at the same time it must be remembered that, although in the full-grown child and adult the wall of the left ventricle is considerably the thicker, in the fœtus, and, indeed, up to seven or eight days after birth, when obliteration of the ductus arteriosus takes place, the wall of the right ventricle is quite as thick as that of the left. This peculiarity may be accounted for by the right ventricle having to propel the blood of the fœtus through the extended course of the ductus arteriosus, the descending aorta, and the placental circulation.




A. Thin muscular wall of left ventricle.
B. Point at which the development of the interventricular septum has ceased.
C. Large vessel arising from right ventricle.

With regard to the communication between the ventricles, it will be noticed that the development of the septum has ceased at the point where it usually does in almost all cases presenting this condition, namely, close to the base of the ventricles.

Division of the arterial bulb, although arising by an inde-

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pendent process, does not take place until after some advance has been made in the division of the originally single ventricle; it is possible, therefore, that the interventricular septum had not yet reached the stage when it would be necessary, for the efficient working of the heart, that division of the arterial bulb should take place, and thus produce a separate vessel for each ventricle.

The septum of the arterial bulb was not developed at all, and there was a persistence of the entire left 5th branchial arch.

For the other specimens I am indebted to Dr. Hebb.

Case 2. The child from whom this specimen was taken was five years of age; she attended in the out-patient department, under Dr. Hebb's care, for shortness of breath and fits of unconsciousness, with which she had suffered since two years of age. There was intense cyanosis, and a loud systolic bruit could be heard all over the thorax, but especially marked over the pulmonary area. There was clubbing of the tips of the fingers.

At the post-mortem examination the following condition of the heart was found:

It was somewhat globular in shape. Weight with aortic arch seven and a half ounces.

| | |
|---|---|
| Greatest transverse measurement . | $2\frac{3}{4}$ inches. |
| Greatest vertical measurement . . | $3\frac{3}{4}$ „ |
| Cavity of right ventricle . . . . | $2\frac{3}{4}$ „ |
| Cavity of left ventricle . . . . . | 2 „ |
| Circumference of tricuspid orifice . . | $2\frac{5}{8}$ „ |
| Circumference of mitral orifice . . | $2\frac{1}{2}$ „ |
| Wall of right ventricle . . . . . | $\frac{3}{8}$ of an inch. |
| Wall of left ventricle . . | just over $\frac{3}{8}$ „ |

The muscular wall of each ventricle is considerably hypertrophied. The cavity of the right ventricle is much the larger, a condition which may be accounted for by the greater amount of pressure within its cavity, owing to the orifice of the pulmonary artery being below and to the right of that of the aorta, and thus, during the ventricular systole, the blood contained in the right ventricle passed into the aorta

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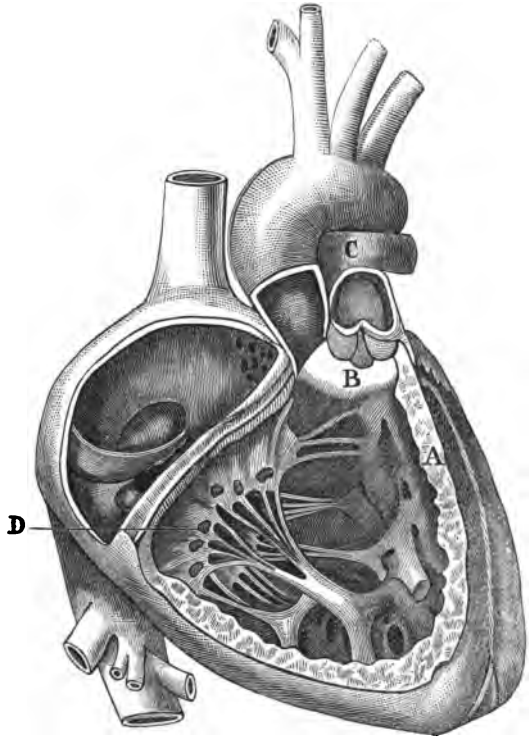
and pulmonary artery, whereas that in the left passed to the aorta alone.

In this case the development of the interventricular septum, although not complete, has approached more nearly the base of the ventricles than in Case 1, and the septum of the bulbus




A. Hypertrophied muscular wall of right ventricle.
B. Communication between ventricles at upper margin of interventricular septum.
C. Bifurcation of pulmonary artery.
D. Vegetations on tricuspid valve.

arteriosus and that of the ventricles have almost become continuous. There is a communication between the auricles; but a very efficient valve, which is formed by the non-adherence of the posterior auricular septum to the annulus ovalis, exists, and prevents any regurgitation of blood from

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the left to the right auricle. The septum between the aorta and pulmonary artery is complete, and there is no trace of a ductus arteriosus. From a pathological point of view this heart is interesting, as numerous coarse, tough vegetations exist on the cusps of the tricuspid and aortic valves, and also at the root of the pulmonary artery, below the cusps. The existence of these vegetations is probably due to some intra-uterine inflammation having taken place. The orifice of the pulmonary artery is very narrow, admitting only the passage of a coarse probe. This stenosis is caused by the vegetations which exist at the root of the artery, and doubtless was a factor in causing the dilatation of the right ventricle. The mitral valve is quite normal.

Case 3. This specimen was taken from a girl æt. 20, who was under Dr. Murrell's care in the Harpur Ward. When attending in the out-patient department she complained of palpitation and shortness of breath, which had lasted for about three years, during which time she had been gradually getting worse. On admission to hospital she complained of pain in the cardiac region. There was considerable dyspnœa. No fulness of the superficial veins of the chest existed. The visible cardiac impulse was diffused. Point of maximum intensity of impulse slightly displaced outwards, and somewhat diffused. No extension of area of cardiac dulness to right or upwards, but the area is considerably increased towards the left. There was a loud systolic bruit, with the maximum intensity at and just outside of the mitral apex, audible also towards and at the ensiform cartilage, well conducted towards the axilla, imperfectly towards base. There was no cyanosis. Patient died forty-three days after admission to hospital. The absence of cyanosis in this case and in Case 1 and the presence of it in Case 2 is somewhat remarkable. At the post-mortem examination the heart with the aortic arch was found to weigh seventeen and a half ounces.

| | | |
|---|---|---|
| Greatest transverse measurement . . | 5 | inches. |
| Greatest vertical measurement . . | 6½ | „ |
| Cavity of right ventricle . . . . . | 5 | „ |
| Cavity of left ventricle . . . . . | 4 | „ |

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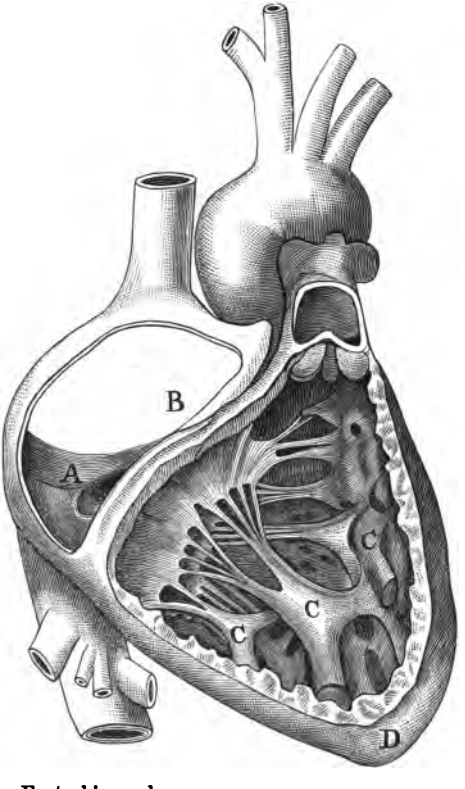
| | |
|---|---|
| Circumference of tricuspid orifice . | 4 inches. |
| Circumference of mitral orifice . . | $3\frac{3}{4}$ ,, |
| Wall of right ventricle . . . . . | $\frac{2}{8}$ of an inch. |
| Wall of left ventricle . . . . . | $\frac{3}{8}$ ,, |




**A. Eustachian valve.**
**B. Aperture between auricles.**
**C. Enlarged columnæ carneæ and musculi papillares.**
**D. Apex of heart formed by right ventricle.**

The right side of the heart is extremely large, and its apex much lower than the left. The wall of the left ventricle is somewhat thicker than that of the right, but the columnæ carneæ and musculi papillares of the right side are so large that they make it in reality much thicker than the left. The two auricles are practically thrown into one; there is no sign

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of a development of a septum from the anterior wall of the common auricular cavity, but the two folds from the posterior wall, forming the Eustachian and interauricular valves respectively, have appeared. This is a curious fact, as the anterior septum is the one which generally first makes its appearance.

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# SIX CASES OF INTEREST.

## THEIR CLINICAL AND PATHOLOGICAL HISTORY.

By Dr. HEBB and Dr. WILLS.

Case 1. *Mediastinal tumour.*—Mabel P—, æt. 11½, was admitted into St. Margaret's Ward, under Dr. Sturges, in September, 1888. The following history was given of her illness. She was quite well until August, 1888, when her mother hit her on the left side, and took away her breath. Since that she began to complain of pain in that side and shortness of breath. In September she began to sweat at night and lose flesh, and she had occasional cough with some muco-purulent expectoration.

When admitted she was pale, somewhat emaciated, and her face wore a constant anxious expression. The superficial veins over the front of the chest were more marked than usual, and there was an area of absolute woodeny dulness on percussion over the sternal region, and for about two inches right and left from the level of the second to the fifth rib. Over this area the breath-sounds were bronchial, especially at the right apex. There was also an area of impaired resonance in the right scapular region with bronchial breathing on auscultation. Elsewhere the breathing was feeble but normal. No added sounds. Heart's apex two inches below and one inch outside nipple in sixth interspace. Sounds normal, cardiac dulness continuous with area of dulness above described. No evidence of disease in abdominal organs. Urine was free from

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albumen. Slight ichthyotic condition of the skin. She remained in the hospital about two months. No alteration taking place in the physical signs except slight lateral extension of the dull area. She was occasionally sick and was always very depressed. She lost four pounds in weight. Her temperature ranged from normal to 101°, but the rises were only occasional and showed no periodicity.

She was readmitted on March 16th, 1889, looking extremely ill, suffering from great dyspnœa, abdomen distended with fluid and much general anasarca. The physical signs were much the same as before, but the area of dulness had now extended to the mid-axillary line on each side and up to the clavicles. Marked dulness at right posterior apex, also at right base, where there were physical signs as of fluid in the pleural cavity.

The breath-sounds over the dull area in front and at the right apex posteriorly were bronchial but distant. No added sounds. Tolerably good breathing audible over the middle of the right lung posteriorly and over the whole of the left back.

The urine was loaded with albumen. Expectoration much the same as before. No tubercle bacilli were detected in the sputum when it was examined by Dr. Hebb.

Shortly after admission the abdomen was tapped and four pints of milky fluid were drawn off. She was somewhat relieved but was still obliged to sit up always.

The anasarca gradually increased, urine was solid on boiling for several days before death. She suffered much from sickness and diarrhœa. She gradually got weaker, and died on March 27th. The temperature one day reached 100°, but was otherwise not above normal.

She had three brothers and three sisters alive and well, six had died, one from meningitis, one at birth. Her mother had had three miscarriages. Her father died from "diseased lungs." Her mother was healthy. She had had no previous illness except measles.

Post-mortem examination was made six hours after death.* Body much emaciated; skin hard, dry, and rough, is covered with numerous scabs of small size. General subcutaneous

* Post-mortem Book, vol. v, p. 146.

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œdema. Purulent discharge from both nostrils. The peritoneal sac contains a large quantity of fluid resembling thin milk and water.

On removal of the front of chest the middle third of the thorax, above the heart and from the root of the neck, is seen to be occupied by a new growth. The tumour lies between the lungs, but presses more to the right side, and in the antero-posterior direction it extends from behind the sternum to the costo-vertebral grooves behind, so that the œsophagus, trachea, and vessels are closely embraced. From above downwards the tumour extends from the root of the neck to the diaphragm. The growth is very hard and white. It consists apparently of a flat fibrous original tumour, the size of which has been much augmented by numerous greatly enlarged glands, some of which are undergoing caseous degeneration in places. Both lungs are studded over with indurated nodules, which vary in size from a pin's head to a walnut. At the apex of the left lower lobe is a cavity communicating with a large bronchus. This vomica is apparently due to the breaking down of the nodules. Owing to pressure of the growth, the right bronchus comes off from the trachea in a straight line downwards, while the left comes off at almost a right angle. The parietal pleura of the right thorax is studded over with white secondary nodules. Liver and spleen not noteworthy. Kidneys 4 and 4½ oz., typical examples of the "white mottled," surface smooth, cortex large, colour yellow, mottled with purple streaks; pyramids purple. Gastro-intestinal tract *nil*. No enlarged mesenteric glands.

Microscopical examination of the skin shows that its roughness is due to a thickening of the cuticle, which is also raised into regular elevations, so that it may be regarded as a mild example of ichthyosis. The arteries to the skin have unusually thick walls, all three coats being hypertrophied, but chiefly the intima.

Microscopical examination of the intra-thoracic growth shows that it essentially consists of cells of somewhat variable size, and arranged in no definite manner. Their appearance contra-indicates an epithelial origin, and they resemble rather magnified lymphatic elements. There is abundance

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of fibrous tissue, between the meshes of which the cells are for the most part disposed. In some places are irregular areas where the growth has degenerated (caseation), but there is no breaking down, the skeletons of the original elements being still visible. In one or two places are giant-cells.

We are disposed to think that the tumour is a chronic inflammatory growth, either allied to a tuberculosis of a very chronic nature, or it might have been lymphomatous with a tuberculosis grafted over it. The former view is the more probable.

Dr. Hebb, who saw her as an out-patient in the first instance, considered the case one of sarcomatous mediastinal growth, the origin of which was doubtful; basing his diagnosis on the extreme dulness over the tumour and the absence of pyrexia. When Dr. Sturges saw her, after admission, he considered that it was probably a case of caseating tubercular bronchial glands, without any evidence of more widely spread tubercle. She then went out and was lost sight of for some time; when she came back and was again seen by Dr. Sturges he adhered to his former view of the case, although no tubercle bacilli could be found in the sputum.

The naked eye post-mortem appearances were those of a fibro-sarcoma, but microscopically it resembled one of those chronic inflammatory processes, such as actinomycosis bovis, which were held for a long time to be of a sarcomatous nature. The general conclusion drawn from the microscopical appearances is that it was a slowly growing tubercular affection starting in the glands at the root of the lungs.

Case 2. *Tubercular tumour of cerebellum.*—Elizabeth A—, æt. 19, was admitted on May 2nd, under Dr. Donkin, into Tillard Ward. She was a domestic servant, and unmarried. She gave the following history. A year previously she began to suffer from pain in the head, chiefly in the frontal region, which continued until admission. Seven weeks ago she noticed that her sight was getting dim, and this rapidly increased until shortly before admission she became totally blind. During this latter period she was also occasionally

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sick, generally after food. There was no history of any previous illness, nor of syphilis. She first saw Mr. Macnamara at the Royal Westminster Ophthalmic Hospital on account of her blindness, and he then thought the appearance of her retina pointed to albuminuric retinitis with hæmorrhages. He sent her on to Dr. Donkin.

On admission she was well-nourished. There was no paralysis of any limb, gait slightly staggering, but no marked ataxy, and the uncertainty of her walking appeared as if it might be all accounted for by her blindness, which had come on so rapidly. She could both stand and walk without assistance. The knee-jerks appeared to be absent on both sides. No ankle-clonus. No loss of sensation over body or limbs. There was no facial paralysis or squint. The pupils were widely dilated and equal. There was double neuro-retinitis, with much blurring of the discs, numerous radiating white streaks over and between the vessels, and several white cribriform patches scattered over the fundus. She was quite blind. She complained of pain in the frontal region of the head.

She continued in much the same condition, being sick almost daily and complaining always of the pain in the head, until May 20th. Pus was then found to be coming from the right ear, the membrane of which was perforated. There was some tenderness over the mastoid region. This continued till June 1st, when pus came from the mouth also, apparently having travelled down the Eustachian tube. She gradually became more comatose, complaining when roused of severe headache, and being sick occasionally.

On June 8th she was transferred to a surgical ward, and the mastoid cells were trephined by Mr. Macnamara. No pus was found, and the bone appeared healthy. As her symptoms did not improve, she was again operated on on June 12th, an opening being made with the trephine into the skull behind the base of the mastoid process. A trochar and cannula were introduced in various directions, but again no pus was found.

She gradually became more deeply comatose, and died on June 16th. The temperature rose to 107° before death, having previously been normal all the time she was in the hospital.

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Post-mortem examination made twenty-seven hours after death.* Body somewhat emaciated. Behind the right ear are two surgical wounds: one, circular, about the size of a threepenny piece, leads into the mastoid cells; the second lies behind and above the former, and is triangular in shape, with the apex downwards. At the apex there is an aperture in the skull which passes just above the lateral sinus into the inferior external temporo-sphenoidal lobe in its posterior third. This surgical wound does not quite reach the lateral ventricle, but ends in the white matter just outside the posterior cornu. There is no trace of any kind of meningitis, and with the exception of the surgical wound the cerebral surface is quite normal. On removal of brain excess of quite clear fluid escaped.

The cortex of the inferior surface of the right lobe of cerebellum is occupied by several irregular masses of caseation. These are arranged so as to have a somewhat stellate appearance, and are of a quite firm consistence. Although reaching to the surface of the cerebellum in some places these caseations do not implicate the pia mater, which is quite smooth and shiny externally. The rest of the cerebrum and cerebellum is not noteworthy.

The optic discs seem somewhat swollen. The yellow spot is well marked in both eyes. The retina is quite normal in appearance and even in colour. The right membrana tympani is detached in great measure; it (or rather its remains) lies pushed back against the wall of the tympanum. Between the two and in the "upper tympanic cavity" were discovered the incus and the malleus. The stapes was not found. There is no necrosis of the temporal bone nor caseous matter in any of the auditory cavities. To the naked eye the spinal cord is normal.

Both lungs are much engorged posteriorly, and at the right base is a patch of recent pneumonia about the size of a hen's egg. The superjacent pleura is covered with a thin layer of recent lymph. About the centre of the right lower lobe is a nodule of encapsuled caseation about the size of a pea. Heart, liver, and spleen not noteworthy. Kidneys āā 4½ oz. Cortices swollen and pallid; vessels full of blood;

* Post-mortem Book, vol. v, p. 189.

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several irregular patches of caseation in the pyramids. Gastro-intestinal tract normal, uterus normal, ovaries large and flabby ; several small cysts.

Microscopical examination of the cerebellar tumour showed it to be tubercular. The areas of caseation are surrounded by tissue where the degeneration is less advanced, and in which are numerous tubercles and frequent giant-cells. The caseation areas in the kidney were found by microscopical examination to be non-inflammatory, and were apparently due to some blockade of the pyramidal parallel leading to necrosis of the renal tissue.

This case, which somewhat resembled the succeeding one in both symptoms and post-mortem appearances, was considered when she was first admitted under Dr. Donkin to be a case of tumour of the cerebellum, probably gliomatous in nature ; as the absence of other symptoms of renal disease rendered it unlikely that the view taken of it from the appearance of the retina was correct.

When pus was found coming from the ear, and evidence of suppuration of the middle ear became clear, it was considered possible that the affection might, after all, be an abscess in the temporo-sphenoidal lobe, or even possibly the cerebellum, as the staggering, blindness, and absence of knee-jerk pointed to an affection of the cerebellum. Hence surgical measures were taken, but, as the post-mortem showed, they were naturally unsuccessful, the margins of the tumour being so little defined that even if it had been possible to get at it, its removal would have been impracticable without taking away with it the whole cerebellum.

Case 3. *Sarcomatous tumour of cerebellum.*—Frederick M—, æt. 8, was admitted into St. Margaret's Ward, under Dr. Sturges, in February, 1889.

The boy had always had good health, with the exception of "slight bronchitis," to which he was always subject, until the end of 1887, when he had a fall, cutting his head, and causing him to complain of headache for two or three days afterwards. In October, 1888, his mother noticed that he began to squint and to stagger in his walk "like a drunken man." He also complained of headache, and his sight be-

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came defective. He continued to go to school until the end of December, though getting gradually worse. He began to complain of giddiness, and often fell when walking. He suffered from sickness and diarrhœa for a fortnight before admission.

On admission he was a healthy-looking boy, but with a rather large head. There was no evidence of loss of memory or intelligence; on the contrary, he was decidedly sharp. He complained of headache from time to time. There was occasional double external strabismus; the pupils were equal and somewhat dilated; his sight was considerably impaired, but he could tell accurately the number of fingers held up before him. He walked with his hands stretched out before him with a markedly ataxic gait, and he kept his feet widely separated. When standing with his eyes closed he swayed about somewhat, but did not actually fall. There was no inco-ordination of the hands or arms. The knee-jerk in the right side was almost absent, on the left brisk; no ankle-clonus. There was no loss of common sensation, nor of the special senses other than sight. The superficial reflexes were normal. No loss of muscular power. The abdominal and thoracic viscera were healthy. Mr. Cowell examined his eyes, and stated that he was suffering from optic neuritis going on to atrophy in both eyes with astigmatism.

From this time onwards all his symptoms gradually became worse. His sight became more and more impaired until, by the end of March, he was almost completely blind, being only just able to distinguish light from darkness. The ataxy became more marked, and at the same time the legs became weaker until he could not walk at all. He suffered constantly from headache, and became at the same time very irritable, being much annoyed by any noise, such as the other children in the ward crying. He began to vomit about three weeks after admission, and from that time onwards until his death he almost daily vomited once, twice, or thrice. He gradually lost weight.

On February 24th he had two attacks of giddiness in which he fell to the ground.

On April 5th, by which time he was completely confined to bed on account of the weakness of his legs, he began to

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pass his motions and urine in bed; this he always did afterwards. There was now some tremor of the arms, especially when he attempted to grasp any object.

On April 18th he had a convulsion lasting about one minute, which commenced with a sharp sudden cry; he became blue in the face, his back was arched, his limbs stiff, and the mouth drawn to the left side. He recovered consciousness immediately afterwards. By the middle of May he had become much weaker—he could not raise himself in bed. He lay usually on his right side with his legs flexed on the thighs and the thighs on the abdomen, and he resisted all attempts at extension, although, when this resistance was overcome, the limbs could be straightened completely. He always complained of pain down the limbs when this was done. The knee-jerks were apparently completely abolished. He was quite blind, and there was constant nystagmus. He was frequently sick, and passed his urine and motions in bed. From time to time he had a fit, similar to the first one, but without the cry. The tonic spasm appeared to be general, affecting the trunk, arms, and legs. During the last month he had a fit almost daily, and on one day as many as nine. They were noticed to come on frequently when the boy had just been turned on his right side. His memory became somewhat impaired, and he confused people's voices which he had previously been able to distinguish, but up to the last week he could always converse intelligently. At last he became drowsy, then completely comatose, and died on July 23rd. His temperature was never above normal until the last month, when it occasionally rose to 100°.

There was nothing noticeable in the family history.

Post-mortem examination made twenty-one hours after death.* Body, especially the lower extremities, much wasted. Legs stiff and drawn up. Head measures 21½ inches in circumference. Occipito-frontal diameter = 12½ inches. From ear to ear = 11½ inches. Brain (with some fluid) weighs 56 oz. Skull cap thin. Bones of vertex separate, being connected by fibrous tissue only. Convolutions much flattened. On removing the brain a large quantity of clear fluid escaped. The lateral ventricles are much distended and

* Post-mortem Book, vol. v, p. 222.



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their walls thinned. The centre of the cerebellum is found (on making a vertical median incision) to be occupied by a new growth which is irregular in shape, bluish-white in colour, and displacing about one third of the cerebellar tissue. It is, roughly, about the size of a large walnut. It abuts against the fourth ventricle, which it has flattened out. The anterior ends of both temporo-sphenoidal lobes are infiltrated with a similar growth. Beneath the pia mater of cerebellum and also underneath that of the temporo-sphenoidal lobes the cortex is invaded by the neoplasm, which shows as a bluish-white infiltration that has displaced the grey matter. Besides these, there are one or two small areas of opacity on the cerebral surface.

From the upper part of the cervical enlargement as far as the lower end of the cord the posterior aspect of the spinal cord is covered with this new growth, which shows as white bosses beneath the arachnoid. In several places the cord is invaded, but on the whole the nervous tissue is less affected internally than are the posterior roots, which are everywhere involved. On the anterior surface there is only one tumour, about the mid-dorsal region.

In the sheath of both optic nerves there is a considerable quantity of clear fluid, so that just behind the ball the sheath bulges considerably.

The thoracic and abdominal viscera are quite healthy. The skin is everywhere perfectly healthy and sound.

Microscopical examination of the growth shows that it is a round-celled sarcoma. On the posterior aspect of cord the growth extends, on the average, as far forward as about the centre of the lateral columns. The posterior roots are, all the way down, closely embraced by the growth. In some places there is a slight invasion of the nervous tissue.

The diagnosis in this case was from the first tolerably clear, and the association of the symptoms of blindness, staggering gait, sickness, and absence of knee-jerk pointed pretty clearly to the cerebellum as the seat of disease. And further, the wasting and subsequent rigidity of the muscles, made the fact of the downward extension of the growth and involvement of the posterior columns of the cord and posterior nerve-roots tolerably evident.

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Case 4. *Death after administration of an enema.*—Alice M—, æt. 19, a servant, was admitted into Tillard Ward, under Dr. Donkin, on June 20th, 1889. This patient had been in good health until one month before admission. She then began to feel weak and ill, finding her work too hard for her, and feeling tired and depressed by the evening. She had some slight pain in the abdomen the day before admission. She gradually got worse, and four days before admission she took to her bed. She had suffered from habitual constipation for some years, and her bowels had not been opened for a week before admission. She had been in the habit of drinking water from a cistern which supplied a w. c. She had had previous good health, but had lost one stone in weight during the last few months. Her mother died from "tumour," otherwise the family history was good.

When admitted she complained of feeling weak and languid, and of suffering from slight pain in the abdomen. She sometimes felt some difficulty in breathing. She lay low in bed, on her back, with flushed and anxious face. The abdomen was tumid, and she complained of pain on palpation over the right iliac fossa. A large accumulation of fæces throughout the whole length of the colon could be felt through the abdominal wall. There were no spots. The heart gave no abnormal physical signs. There was slight bronchitis. Her pulse was fair in force and volume, and she did not appear to be very prostrate. Temperature 100°, pulse 84, resp. 22.

She was considered to be suffering from enteric fever with constipation. She continued in the same state all next day, her general appearance improving somewhat; in the evening she was given an enema of a pint and a half of warm soap and water, which was administered without difficulty and without causing her any pain. The bowels acted well after the enema, the motion being constipated. Shortly after the enema she became collapsed, sinking into a half-conscious condition, with pale, pinched face and sunken eyes. The skin of her body was hot and the extremities cold. The breathing became stertorous, she became more unconscious, the pulse rose to 124, the temperature to 101·4, then to 104·8, and at 6 p. m. on the day following the administration of the

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enema, she died without recovering consciousness. The abdominal condition did not alter, and the colon evidently still contained much fæcal matter.

Post-mortem examination, forty-four hours after death.*—Body somewhat emaciated. Abdomen distended, skin thereof green. Brain 45 oz., membranes and nervous tissue normal.

Bases of lungs enlarged. Bronchitis. A few old adhesions over the front of right upper lobe. Heart 6½ oz., normal. Liver 39½ oz., normal. Spleen 6 oz., normal. Kidneys aa. 4¼. The left contains a large cyst with fluid contents, otherwise these organs are normal. Uterus in condition of left latero-version, ovaries normal.

The stomach and intestines are much distended with gases, and in the colon is a great quantity of hard fæces. About the cardiac end of the stomach are numerous small pits of the mucosa; they are quite smooth and their edges even. The intestinal mucosa is quite normal. There is excess of bloodstained fluid in all the serous sacs. No enlarged lymphatic glands.

From the post-mortem record it will be seen that there existed no intestinal or other lesion sufficient to account for death, and therefore the interest of the case centres chiefly in the effect produced by the enema. For soon after its administration the patient became collapsed and never showed signs of recovery. Now although such consequences are rare, and no doubt to some unheard of, and though the literature, of the possible deleterious effect of enemata, is confined to one or two articles, yet such effects, as above described, are recorded. In the 'Lancet,' 1872, vol. ii, p. 587, Dr. G. H. Savage describes a case where, after the administration of a soap and water enema, the patient, a melancholiac suffering from obstinate constipation, became so collapsed and pulseless that he was thought to be dead. He recovered, however, to undergo a similar experience a week later.

The French nation, we understand, are much given to the practice of using enemata, and though their writers are, like those of other nations, in favour of the syringe treatment for the relief of constipation, one or two mention its disastrous consequences. Among these are C. A. Lefebre,

* Post-mortem Book, vol. v, p. 198.

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who wrote a monograph on the subject, and Caulet whose article ('Ann. Soc. d'Hydrol. Méd. de Paris,' 1879–80, xxv, pp. 124–45) was entitled "Contribution à l'histoire de la douche ascendante (intestinale), son action hyposthénisante, accidents grave et mêmes mortels qu'elle occasionne quelquefois, sa valeur thérapeutique dans les maladies nerveuses." Taking all the circumstances of this case into consideration, we are inclined to think that death was due to the administration of an enema acting upon a much enfeebled organism.

Case 5. *Acute diabetes.*—Vivian S—, æt. 13, a schoolboy, was admitted into King William Ward, under Dr. Sturges, on December 20th, 1888.

This boy had been in his usual good health until a fortnight before admission, with the exception that he suffered occasionally from headache. At that time—while working for an examination, which he passed, taking first place in his class, a week before admission—he began to be very thirsty and to get up at night to pass water. His headache also became worse. His appetite continued good but did not become ravenous.

He came as an out-patient the day before admission, and was seen by Dr. Wills. He was then able to walk into the room, and did appear dangerously ill. Tongue and teeth extremely dry, skin dry and body wasted. Face drawn and anxious. Urine loaded with sugar. His relations would not consent to his coming in that afternoon as advised, but during the night he became very restless and delirious, frequently crying out with the pain in his head. He remained in the same condition during the following morning, when his mother decided to bring him to the hospital.

When admitted he was collapsed, with cold extremities and small thready pulse and rapid shallow breathing. Temperature 95°. He was in a semi-conscious condition and did not answer when spoken to. There were no abnormal physical signs in lungs or abdomen. Heart-sounds clear but very feeble. He became slightly more conscious during the afternoon, and then gradually sank and died the same evening, temperature rising to 97·4°.

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He passed no urine after admission. A small quantity was drawn off by catheter. This contained a large quantity of sugar and some albumen. He had had no serious illness before.

There was no history of diabetes, phthisis, or neurosis in his family.

Post-mortem examination (seventeen hours after death).*—Body emaciated. Rigor mortis well marked. Brain 56 oz. Subarachnoid œdema. Nervous tissue firm; vessels of white substance well-marked. No naked eye lesion of membranes or nervous tissue.

Pleuræ normal. Bronchitis. Hypostatic engorgement of both bases. Heart 7¼ oz., muscle firm, endocardium normal. Liver 38 oz., of a pale fawn colour. Spleen 3¼ oz., *nil.*

Kidneys aa. 3¼ oz., consistence normal. Cortices of a pale fawn colour; vessels of cortex well-marked; pyramids purplish.

Stomach much distended; at the cardiac end are a few petechiæ of the mucosa. The small intestine, especially the ileum, shows an unusual number of solitary glands. And in the agminate patches there are similar elevated spherules. The intestinal mucosa has throughout a somewhat granular appearance. There is no ulceration. The vessels are congested. The mesenteric glands are enlarged. There is no caseation in any part of the body.

Microscopical examination of the pons and medulla shows that the vessels and nervous tissue are practically normal. Just below the floor and at the posterior part of the fourth ventricle there is, however, a hæmorrhage on the central line. I am not, at present, inclined to attach too much importance to this appearance; first, because this is only one case; secondly, because the rest of the nervous tissue and its vessels seem fairly normal; and thirdly, because such a hæmorrhage might be the consequence of the mode of death. In one section I noticed collections of leucocytes about vessels. The kidneys show one appearance which I have remarked before in diabetes, that is the basement membrane of the tubules is well seen. In this case there is excess of nuclei on the Malpighian bodies, and the cortical epithelium is cer-

* Post-mortem Book, vol. v, p. 84.

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tainly swollen and granular. In many places it can be seen splitting up into so many laminæ parallel to the long axis of the cell. There are no collections of emigrant cells in the renal cortex.

This case is included in the reports for its clinical importance, the few notes on the morbid histology being at present, from want of time, incomplete. If, however, any more pathological appearances should be discovered, it is proposed to publish this case *in extenso* in the succeeding volume.

We have thought, however, that it may well be included here, because cases of acute diabetes are comparatively rare. In this instance there is a distinct history of mental anxiety dating from about two weeks before admission. This anxiety was very soon followed by thirst, headache, and rapid emaciation.

Two points are worthy of note, first, there was no history of diabetes, phthisis, or any other neurosis in his family; and secondly, that any course of treatment would have been unavailing.

Case 6. *Tubercular meningitis in an adult.*—Charles P—, æt. 32, a harness cleaner, was admitted into King William Ward, under Dr. Sturges, on June 24th, 1889. He complained of pains in the stomach and loss of appetite. Beyond having smallpox when a boy he had had good health until June 20th, 1889, when he vomited about twelve times during the day. This was accompanied by severe cramp-like pain across the upper part of abdomen, which continued until admission, though he was not again sick. He was unable to sleep and completely lost his appetite. He suffered from no other symptoms. He was in the habit of taking three pints of beer daily.

When admitted he was a well-nourished man, whose face was deeply marked by smallpox. His hands were tremulous, his tongue coated in centre with yellow fur. There were no abnormal physical signs in chest; he complained of pain across the upper part of abdomen, but there was no tenderness on pressure. The abdominal muscles were rigid. There were no spots. The liver dulness extended one inch below the costal margin, but the edge of the organ could

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not be felt on account of the muscular resistance. Urine acid, 1022, no albumen. His temperature was 102·4°.

His condition did not change much until July 2nd. He still had headache and pain in abdomen but no sickness. He felt giddy on getting out of bed one day. Bowels regular, motions natural. The temperature ranged between 100° and 102°. On July 2nd, he became more drowsy and began to pick at the bedclothes; he was also delirious at night. His tongue became more furred, drier, and very tremulous. The drowsiness and delirium increased, he refused his food, the urine had to be drawn off by catheter, and he died on July 7th. His temperature remained throughout between 100° and 103°, never falling to normal.

His father and mother both died of dropsy. There was no history of phthisis in the family.

Post-mortem, twenty-seven hours after death.* Body somewhat emaciated. Variola scars on face. Brain 48 oz. Considerable sub-arachnoid œdema and much fluid, intraventricular, escaped on removal of the brain. Both lateral ventricles are much dilated and their walls eroded. The pia mater in the Sylvian fissures and in the antero-median fissure is the seat of numerous somewhat largish tubercles. These in places are adherent to the surface of the brain, so that the superficial cortex comes away on removal of the pia. Cord *nil.*

Right pleural surfaces united by old fibrous bands. Left normal. Lungs very œdematous: small, encapsuled, cretaceous patch near left apex. Bronchitis.

Heart 10½ oz., muscle and endocardium normal. Liver 51 oz., large white patch of thickened capsule at centre of upper surface of left lobe, parenchyma not noteworthy. Spleen 3 oz., very soft and flabby, thick white patch of capsular thickening at the centre of convex surface. Kidneys 6¾ and 7 oz., not noteworthy.

Gastro-intestinal tract normal.

Bladder *nil.*

The whole of the abdominal, prevertebral, and mesenteric glands are much enlarged and caseo-cretaceous.

The chief reason we publish this case is that it illustrates

* Post-mortem Book, vol. v, p. 211.

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the difficulty of diagnosing a case of acute tubercular meningitis in the adult, especially when unassociated with symptoms and physical signs of tubercle in the thorax.

It will have been noticed that the tubercles were only found in the brain, and though carefully looked for in the rest of the body, none were found. For the caseo-cretaceous mass of abdominal glands was firmly encapsuled, and had evidently existed in this condition for a long time, probably many years, and presented, moreover, no naked-eye evidence of tubercle. Yet it would be wrong to exclude these apparently quiescent masses of degeneration from some participation in the causation of the disease, for although they no longer betrayed evidence of a tubercular origin, and though such an origin (taking into consideration the fact that there was no trace of old or recent tubercle in the lungs, &c.) was not probable, it was not impossible.

We started our remarks by saying that this case illustrates the difficulty of diagnosing tubercular meningitis when unaccompanied by other symptoms or signs in the adult. This case was suspected to be enteric fever without diarrhœa. One of us (H.), who observed that the delirium closely resembled the delirium of typhus, carefully hunted for a rash. There was, however, no eruption, nor was there any injection of the conjunctivæ. Another diagnosis that was suggested was cerebro-spinal meningitis, but the tubercular origin was not thought of.

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# REPORT ON TWO CASES

OF

# STRANGULATED UMBILICAL HERNIA,

## WITH RECOVERY AFTER OPERATION.

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By ALFRED E. TAYLOR, B.S.
SURGICAL REGISTRAR.

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Recovery from severe cases of strangulated umbilical hernia being of somewhat rare occurrence, I have extracted the subjoined from the Hospital case-books:

Case 1.—J. B—, æt. 48, a widow, employed as a tailoress, was admitted into the hospital on April 1st, 1888, complaining of great pain in the abdomen, constant vomiting, and constipation. In appearance she was pale and thin, with an expression of extreme anxiety.

She stated that she had always enjoyed good health, was the mother of thirteen children, and was accustomed to work for many hours with the sewing machine which she ascribed as the immediate cause of the umbilical rupture, the hernia occurring suddenly while at work about one month before her last confinement.

Her family history was good. Her mother never suffered from hernia.

Previous to admission she had been laid up at home for a week with sudden and painful increase in the size of the

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hernia, constipation, and vomiting. The hernia was now very painful and irreducible.

On admission she was very collapsed, and vomiting at frequent intervals stercoraceous matter. There was a large umbilical hernia measuring 23 inches in circumference and raised about 3 inches from the surface of the abdomen, tense, tender, and devoid of impulse on coughing, resonant in every part except the upper segment which was dull on percussion (and was afterwards found to contain omentum).

Mr. Davy was at once sent for, and after careful examination he decided to operate. Ether was administered, the skin surface cleansed, and an incision made along the linea alba at the upper part of the hernia about 3 inches long. On the sac being opened, the gut was found to be of a dark, livid colour, but not gangrenous, and the constriction at the neck of the sac was divided in an upward direction and the bowel returned. A piece of semi-gangrenous omentum was removed, after ligaturing its base with strong carbolised silk, the ends of which, cut long, were left out of the wound. Strict antiseptic precautions were used, without the use of the spray. After the sutures were inserted the wound was dusted over with iodoform powder and dressed with dry salicylic wool and pads of Gamgee tissue, a broad abdominal flannel bandage being applied over all. These dressings were not removed for seven days, as there was no appearance of discharge, nor any marked elevation of temperature. Her diet consisted of half a pint of milk with ice for the first three days. Beef-tea and brandy were allowed on the fourth day. Solid diet commenced at the end of the third week. A half grain opium pill was given occasionally.

The sickness ceased from the time of the operation and the patient rallied slowly. The wound on the eighth day was almost completely healed. On the 30th April she got up for the first time, and declared herself well.

Seen December 9th, 1889, she appeared perfectly well. There was a small reducible umbilical hernia about the size of a large orange, the neck of the sac being about the size of a florin, that is completely kept up by the elastic flannel belt which she was advised to wear.

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Case 2. S. W—, æt. 55, housewife, was admitted into Chadwick Ward, on 21st April, 1889, with similar symptoms. Her previous history was good. She had been confined eleven times with full-time children and had miscarried twice. The umbilical hernia had existed for nine years for which she had worn a truss that fitted so badly that she had been compelled to wear a bandage only for seven years. She gave as the cause of the hernia strong labour pains during a bad confinement with the last child but one.

The family history was very good.

On Tuesday, April 16th, the hernia suddenly increased in size while vomiting, became tense and painful, and from that date the bowels ceased to act, nor was "flatus" passed. Vomiting, at first "bilious," then "stercoraceous," appeared the same day and continued up to the time of admission into the hospital. She had consulted a dispensary doctor, who had given her some aperient medicine.

Mr. Macnamara saw her on Sunday the 21st, when she was admitted. He ordered nutrient enemata the same evening. The next day, there being no abatement of the symptoms he operated at 2 p.m., and returned the hernia successfully.

*Operation.*—An incision about three inches long was made immediately below the umbilicus, the sac was opened and the gut exposed. The gut, somewhat purple in colour, free from lymph or signs of sloughing, was at once returned, after dividing the constriction at the neck of the sac in an upward direction. A small piece of omentum was removed at the same time. Three deep sutures were put in, and the margins of the wound brought together with finer silk sutures and dressed with iodoform wool and flannel binder. Strict antiseptic precautions were used throughout. The wound was dressed again the day after the operation, and at irregular intervals subsequently. All healed in seven days except a sinus about one inch from the top of the wound, which continued to discharge up to within two days of leaving the hospital.

After the operation all the severe symptoms abated. Her temperature was never high. For a few days after the operation she was fed with nutrient enemata and allowed ice and half a pint of milk per diem, which was increased to "ad

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libitum" up to the end of the third week, when she was put upon solid diet.

Morphia injections and Tincture of Opium were administered for the first few days.

On May 13th the report stated that the patient felt very well but had not been out of bed yet. Her bowels acted properly every other day, and that she took ordinary solid food, such as an egg for breakfast and tea, with a chop for dinner, &c. The wound was dressed every morning.

On the 10th June she was discharged to a convalescent home for three weeks; the abdomen was firmly strapped before leaving.

Seen early in December, 1889, she was perfectly well, and wearing an umbilical hernia belt.

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# CASE

OF

# HYPERPYREXIA IN ACUTE RHEUMATISM

## TREATED BY COLD PACKING AND ICE.

REPORTED BY F. B. BETTS.

CHARLES H. G—, æt. 40, single, a bank clerk, was admitted into King William Ward, under Dr. Sturges, on June 6th, 1889, as an ordinary uncomplicated case of acute articular rheumatism, on the seventh day of the disease. This was his first attack. He is a well-built, strong, healthy, well-nourished man, and has always had exceptionally robust health, devoting a great part of his time to out-door exercises, and especially boating. He has had no illness since childhood, with the exception that twelve months ago he had slight pain and swelling about the ankles, which passed off in two days. He drank beer and spirits to excess as a young man, but has been more moderate for the last few years. The father and one sister of the patient have each had two attacks of rheumatic fever.

*Present illness and symptoms.*—He was quite well up to seven days before admission, having just returned from a fortnight's holiday in Switzerland; for the latter two or three days of that period he was travelling incessantly and

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became greatly over-fatigued, though not exposed unduly to cold or wet. He at once returned to work in spite of being much worn out with his journey.

Three days afterwards his illness began, the ankles being first affected, and on the third day the knees, when he gave up work and took to his bed. He did not shiver or vomit, his appetite was good and the bowels acted daily. On the night of the third day he commenced sweating profusely.

Late in the day of June 6th, being the seventh day of the disease, he was brought to the hospital wrapped in a blanket and carried up to the ward. The left knee and both wrists were swollen and tender. He was perspiring freely, had no cough, pain in thorax or headache, and presented the appearance of a moderately severe case of rheumatic fever. The temperature in the axilla two hours after his arrival was 103° F., it declined to 102·2 at 12 midnight.

For the first three days after his admission the patient went on like any other case of rheumatic fever, and each morning expressed himself as feeling better. He had the aspect, articular pain, sweating, and tongue typical of the disease. The temperature never rose above 104° F., and as a rule was much lower. The heart, lungs, and urine were normal. He took his nourishment very well. The bowels acted freely. He was ordered an effervescing mixture, as there were no urgent symptoms.

June 9th (10th day of disease).—Patient has a flushed, rather anxious appearance. Passed a restless night, no delirium. Temperature did not rise above 104° Pulse 120. Drinks large quantities of iced milk and lemonade. Ordered twenty grains of salicylate of soda every four hours. On examining the heart there was a loud rough systolic bruit, replacing the first sound at the apex. Second sound at base not clear. No increase in cardiac dulness and no friction sound audible.

During the afternoon he became very restless, and at 6 p.m. the temperature was 105·2°, and a quarter of an hour later 105·8°. Pulse 120, respirations 40. He was still perspiring slightly, and had twitching of the facial muscles and tremor of the hands. He was cold sponged at this stage, and two hours later the temperature was 105·2°.

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At 10 p.m. it had reached 106·6°, and the patient was in a state of semi-delirium, refusing nourishment, and attempting to get out of bed. Respirations 60, laboured and shallow. Pulse 140. The temperature fell one degree after cold sponging for nearly an hour. Respirations 48, pulse 104.

At 11.45 the temperature had again risen to 106°, when he had the first wet pack for one hour, sheets changed every ten minutes, with the result that at 12.45 a.m. the temperature had declined two degrees and there was a marked improvement in the patient's aspect and quality of breathing. Skin of trunk covered with numerous sudamina on inflamed bases. Perspiring very slightly.

June 10th (11th day of disease).—Passed a very restless night, and was delirious at times. Took brandy and large quantities of iced milk and lemonade. He was wet packed and cold sponged three times in the night, with the temperature 106° F., reducing it a degree or two on each occasion. At 9 a.m. the temperature was 106·2° and the patient was almost unconscious, with a pinched face and anxious countenance. The tongue, protruded with hesitation and difficulty a short way, was red and dry at the tip and edges. There was complete loss of control over the bladder and rectum; he passed a large quantity of urine and had several large fluid motions passed involuntary during the night. At 10 a.m. the temperature was 108° (axilla), and he was seen by Dr. Hall, who was sent for, Dr. Sturges being out of town.

The patient was then lying on his back, quite unconscious, stertorous breathing, twitching of the facial muscles, face livid, tremors and subsultus of hands, pulse almost imperceptible, skin dry and harsh, that of trunk covered with milaria. He was at once packed in sheets wrung out of ice-cold water, lumps of ice were placed on and around him, and a pint of ice-cold water was injected into the rectum. The sheets were changed and fresh ice applied every ten minutes for two and a quarter hours. At the end of that time the temperature was 103·8°. Respiration 54, pulse 120. There was a marked improvement in patient's condition, and though still wandering, he was almost conscious. The face was a

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better colour, the pulse regular and full, and he was able to swallow small quantities of milk and brandy.

The temperature continued to decline all day and at twelve the same night was 103·2°. Pulse 84, respirations 40.

11th.—Slept well during night, slightly delirious at times, can now recognise friends. Temperature at 9 a.m. 102° F. No pain, not perspiring. Slight increase in cardiac dulness upwards. Systolic bruit at apex, second sound scarcely audible.

Dr. Sturges saw him in the afternoon and in place of the salicylate of soda ordered five grains of quinine every two hours, and eight ounces of brandy in the twenty-four hours. The temperature gradually rose until 10 p.m. when it was 105·2°; he was packed for three hours in ice-cold sheets, reducing it two degrees.

Almost directly the patient was in the pack the temperature commenced falling, and he began to improve in every respect.

12th.—Packed in sheets wrung out of ice-cold water for twelve out of the twenty-four hours, and it was only by the frequent change of sheets and placing broken-up ice upon the body that the temperature could be efficiently controlled. He was taking forty-eight grains of quinine in the twenty-four hours. His nourishment, consisting of milk, beef-tea, and brandy, he took extremely well. Large quantities of urine passed into the bed. Diarrhœa ceased; no action of bowels for two days.

13th (14th day of disease).—Very restless night, semi-unconscious, delirious at times. Dr. Sturges ordered the patient always to be wet packed when the temperature reached 104° F., but in spite of taking it every hour, or at more frequent intervals, the temperature shot up rapidly to 106° or 107° on several occasions, before it could be controlled, though almost directly the patient was in the pack the temperature subsided, and his condition improved. He was in the pack ten out of the twenty-four hours, with the result that the temperature only once reached 106·8° F.

Besides the packing two ice-cold water enemas were given, bringing the temperature down three or four degrees within two hours. Murmur at apex much fainter, beat in normal



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situation. Dulness extends to third rib. The quinine was discontinued and he took three fifteen-grain doses of antipyrin in six hours but without any appreciable effect. As there was some difficulty in swallowing he was given some five-ounce nutritive enemas injected ice-cold.

14th.—Patient is becoming visibly affected and worn out by the constant high temperature and the continual efforts used in its reduction. His face has a pinched appearance, the tongue dry and tremulous, he speaks with difficulty, there is tremor of the hands, and he is unable to raise his arms. Temperature rose on three occasions during the day and night, once to 106·6° but was kept down by the cold sheets. Passed two large fluid motions and large amount of urine involuntarily. Pulse 100, irregular and feeble. Respirations 42 at 12 midnight.

15th.—There is some slight improvement, he is more conscious and takes nourishment better. Appears to have no pain. Temperature ranges between 101° and 105·4°. In wet sheets nine and a half hours.

16th.—Hands and wrists swollen and painful, patient perspiring freely, trunk covered with a crop of small pustules. Area of cardiac dulness normal, first sound at apex very feeble, no definite bruit or rub. Packed for ten hours altogether. Temperature 100° to 104°. Taking Tinct. Aconiti ♏5 three times a day.

17th.—Consciousness almost returned. Takes nourishment well. In ice-cold pack nine and half hours. Temperature 100° to 104·6°. Breathing quietly, 36 per minute. Pulse 120, regular but feeble, at 10 a.m. Tinct. Aconiti ♏10 every four hours.

18th.—Not packed, temperature 100° to 103°. Pain and swelling of wrists returned. Heart-sounds normal, no increase in area of superficial dulness.

19th.—Passed fairly good night, not delirious. Perspiring slightly, pain in wrists. Patient is too weak to turn himself in bed. Temperature 101° to 103·2°. Not packed. Bowels acted twice involuntarily. Still taking aconite.

20th (21st day of disease).—Patient worse, face cyanosed, some dyspnœa, slight cough. Temperature 103·2°, pulse 120, repirations 48 at 10 a.m. Signs of fluid at right base behind,

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Temperature commenced rising at 5 p.m., at 6 p.m. it was 105·8°, and patient delirious, with increased tremors and dry skin. Wet packed for two hours with temperature 106° F., reducing it to 101° F.

21st.—Double pericardial rub, heard all over præcordium, no increase in superficial dulness. Not delirious, but semi-comatose. Skin moist. Packed four hours, temperature 105·6°, reduced to 101° F. Pulse 124, respirations 42 at 12 midnight.

22nd.—Inclined to be delirious, face dusky and cyanosed. The wet packs are having a bad effect on skin of back, and bed-sores are forming in spite of every precaution. He is much worse and has a very prostrated appearance. Temperature rising all day to 105·8° at 11 p.m. when he was packed four and half hours, reducing it to 103° and a further fall of one degree after the pack was discontinued.

23rd (24th day of disease).—Passed a very restless night. Pulse extremely feeble and irregular. Patient quite unconscious. Temperature at 5.30 p.m. rose to 105·6° fell to 102·8° after three hours' packing. Rose to 105° F. at 9 p.m., and patient died in the pack, exactly fourteen days after the first high temperature. Half an hour after death the temperature was 103·2°.

*The post-mortem examination* was made by Dr. Hebb. The viscera were soft and swollen, the blood more fluid than usual, hypostatic congestion of both lungs, slight pericarditis, but no endocarditis. On examining with a high power some of the fluid blood taken from the heart, numerous bacilli were discovered by Dr. Hebb.

The case is interesting from the long-continued and sustained high character of the pyrexia, and also as showing the extremely beneficial result of the continual external application of cold through the medium of sheets wrung out of ice-cold water and placed round the body. There was nothing whatever in the history or aspect of the patient to make one suspect that the disease would take such a remarkable and alarming course as it did in this case; in fact, the patient was doing well and had reached the tenth day of his disease without any complication, when the temperature shot up without any warning to 106·6°.

The ordinary cold-bath treatment was not employed in

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this case, but ice-cold packs were vigorously persevered in throughout, and certainly had the effect of prolonging life considerably beyond the period at which a fatal termination is usually observed when the temperature has reached the excessive height it did in this case.

Dr. Wilson Fox, who was among the first in this country to bring the cold-bath treatment prominently into notice, only used it when the temperature had reached 107° F., and then immersed the patient into a bath at 90° F. He reported two successful cases of his own in 1870 treated by immersion and nineteen cases treated by drugs and bleeding, all of which proved fatal. Since then the cold-bath treatment has become almost universal, and the total powerlessness of bleeding as adopted by Dr. Ringer, and of the most powerful drugs, to effect the reduction of temperature which was at once accomplished by the cold bath, has been conclusively proved.

Of late years the cold-bath treatment has been revised, and it is not now considered advisable to wait until the temperature has reached the almost fatal height of 107°, and the heart has become enfeebled and the tissues generally damaged by the heat. The bath is now employed at a temperature of 105° F., and may then be gradually cooled from 90° or 100° down to 60° or even 50°, if the temperature of the body shows great tendency to rise. The application of cold, as applied through the medium of the bath, requires to be used with some caution; two or three fatal cases have been reported where the patient was immersed suddenly into a bath of cold water at 60° F.

Salicylate of soda, quinine, antipyrin, and aconite were all given a fair trial in full doses, but their effect, if they had any at all, was too transient, and would have had a depressing action on the heart if too long continued.

The most important established facts in connection with rheumatic hyperpyrexia were clearly shown in this case. In the first place, as regards time of year. The case reported occurred in the month of June. The Committee nominated by the Clinical Society to investigate the causes, consequences, and treatment of hyperpyrexia found that 39 per cent. of the cases occurred in the summer months of June, July, and

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August, whereas rheumatic fever is most prevalent in the winter months.

Whilst the cases of rheumatism are pretty equally divided between both sexes, hyperpyrexia is nearly twice as common in males as it is in females.

There is an undue proclivity for hyperpyrexia to occur in a first attack of acute rheumatism.

The joint affection as a rule subsides before the onset of the hyperpyrexia, but neither this nor the cessation of sweating is an invariable antecedent of the hyperpyrexial outburst. Both pain and sweating ceased at the onset of the high temperature in the case reported, and returned as the temperature fell. Delirium usually comes on when the temperature reaches 104° or 105°, with a tendency to further rise. Coma generally comes on later.

As to the causes of hyperpyrexia there is very little definitely ascertained; it occasionally accompanies typhoid fever, pneumonia, scarlet fever, diseases of the brain and cord and other disorders, but it is in acute rheumatism that it has attracted most attention and is most frequently encountered. It is generally referred to some interference with the function of a portion of brain-matter in the medulla, known as the heat centre. "Cases of hyperpyrexia are therefore regarded as being probably of neurotic origin—as due to some cause which exercises a paralysing influence on the thermic centre."

Hyperpyrexia was at one time looked upon as an almost always fatal complication, but since the adoption of the continuous cold-water treatment, no case need be looked upon as hopeless. The chances of the efficacy of this treatment are greater the earlier it is adopted, the temperature can never be safely allowed to go above 105°, and if the cold bath is not at hand, cold may be applied with as good results by means of ice-cold sheets and broken-up ice placed upon the body. A pint of ice-cold water injected into the rectum was used on several occasions in the case reported, and proved a most valuable mode of treatment.

The tendency to grave internal complications—pneumonia, pleurisy and pericarditis—is not at all increased by so seemingly formidable a treatment; on the contrary, where the

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treatment is actively carried out and not merely adopted as a last resource, more than half the cases recover. It is to be hoped that in time no hospital will be without the amplest machinery for applying every variety of the cold-water treatment. All the directions regarding the patient were thoroughly carried out by Sister King William and the day and night nurses under her, who performed their trying and arduous duties with an energy and loyalty which are beyond all praise.

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# A CASE

OF

# ACUTE ARSENICAL POISONING.

## RECOVERY.

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REPORTED BY W. POWELL.

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JAMES LEWIS W—, æt. 40, painter, was admitted to Burdett Ward, under Dr. Donkin, at 3 a.m. on October 23rd, 1889, with a history of having taken about three tablespoonfuls of an arsenical solution one hour before, with suicidal intent.

The patient, a chronic alcoholic, had suffered for over thirty years from general psoriasis, for which he was in the habit of taking during the whole of this time a six weeks' course of arsenic about three times in the year, the skin affection being relieved thereby but not cured.

Having acted as butler in the families of medical men for about twelve years and subsequently being a frequenter of hospital skin departments, he, as he says, "knew something about medicine"; consequently when asked to assist in the alteration of the dispensing department of the skin hospital where he had been an in-patient, he improved the opportunity by helping himself to a small bottle of Liq. Arsenicalis, from which he afterwards made his medicine, putting thirty drops into a 6 oz. or forty drops into an 8 oz. bottle and taking two tablespoonfuls three times a day. He says that he was never very particular in the quantity taken but

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always knew when the safe mark had been exceeded by the purging it caused.

He had already been about six weeks under this treatment, when going home late one night, or rather early in the morning of October 23rd, a little the worse for drink and in a desponding mood, he had a quarrel with his wife and in a fit of temper drank the contents of the bottle containing the *strong* solution of arsenic. This was at 2 a.m. In half an hour the symptoms appeared: buzzing noises with shooting pains in the head and vomiting. Getting frightened, he started for the hospital, but had not proceeded far on his way before "his legs began to give way under him." Being found now by a police constable clinging to some railings and vomiting violently he was assisted to the hospital where he arrived about three o'clock, one hour after taking the poison.

On admission the patient appeared very frightened and excited, and could not walk without assistance. Any fluid given caused immediate vomiting. The stomach was thus thoroughly emptied and washed out. He now complained for the first time of a pain in his stomach, which soon became very severe, followed by a burning sensation at the back of the throat.

10 a.m.—Patient says he remembers nothing of his entrance into the hospital. All is a blank from the front steps till he found himself in bed an hour or two afterwards. He has been very restless and prostrate, constantly retching and occasionally vomiting a dark-coloured bilious-looking fluid which, however, gives no relief to the symptoms. No blood. Says his throat is as hot as fire, with a dry and choking sensation, and that his tongue is much too large for his mouth. There is marked epigastric tenderness and he describes the pain in the stomach as being like a red-hot poker in it. The conjunctivæ are injected, with smarting and suffusion of the eyes. Complains of shooting pains in head with buzzing noises, crampy pains in feet, and much thirst, deglutition being slightly painful. Temperature 98·6. Pulse feeble 92, regular.

2 p.m.—Passed urine for the first time since admission. There was considerable difficulty in commencing the act of urination, with much pain and straining at the end. No

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blood. This urine was sent to Dr. Dupré for examination, as also, subsequently, were daily specimens.

24th.—Patient has been very restless, had a little sleep this morning for the first time. Pain in stomach less but head symptoms continue much the same. The retching continues but is not so severe. Vomited about two ounces of brightish blood. Still complains of cramp in feet. Is able to take a little milk. Pulse 70, small, regular; temperature 97·8°.

25th.—Symptoms the same but less severe. Bowels opened for the first time, motion being dark and constipated, no pain and no blood. Still much pain and straining after urinating. Temperature 98°.

26th.—No vomiting since yesterday, but slight retching continues. Still complains of headache and thirst with a feeling of soreness in epigastrium. Had but little sleep.

28th.—Patient says he feels much better. Had a solid motion yesterday after a dose of castor oil. No pain nor blood. Retching ceased. Headache much less. Complains of a pain in lower part of left lumbar region, near spine.

30th.—Patient continues to improve, with the exception that the pain in the lumbar region has extended downwards and there is numbness of the left leg. Desquamation has freely taken place in the patches of psoriasis, leaving a reddened surface. Still some smarting of the eyes.

November 2nd.—Headache and pain in stomach and throat quite disappeared. Numbness in left leg continues. Patient gets up. Bowels not opened since October 27th. A dose of Mist. Sennæ Co. given.

8th.—Profuse epistaxis this morning, relieving headache which had reappeared. Still much numbness in left leg with tingling in sole of foot. Patient says he never suffered from these symptoms before the poisoning.

9th.—Patient was discharged to-day feeling well with the exception of a slight headache and some numbness in left leg and foot. The average temperature all through has been subnormal.

*Comment.*—This affords an excellent illustration of a case of acute arsenical poisoning followed by recovery. There is every reason to believe that a quantity of solution equal to nearly six grains of arsenic was taken. The wife corro-

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borated her husband's statement by indicating a point on the bottle up to where she thought the liquid reached, and which contained on measurement about an ounce and a half of fluid. The few drops of solution the bottle still contained was slightly coloured and had a faint odour of lavender. This was quantitatively examined by Dr. Dupré and found to contain arsenic equivalent to about four grains in the ounce.

It must be remembered that arsenic in solution is a much more powerful poison than in powder. The cases of recovery after large single doses have almost invariably been those in which the poison was taken in the solid form, and often on a full stomach. It is probable that in the present case the patient was somewhat tolerant of the drug owing to the fact that he had undergone prolonged treatment with it for his skin affection.

This is one of the occasional cases where purging is conspicuous by its absence, remarkable in this instance from the fact, and noticed by the patient when he volunteered the statement, that, during the course of treatment which he periodically underwent, an excessive dose of the drug acted on his bowels "like medicine" (purgative).

*Details of the examination of samples of urine for the detection of arsenic in them.* By Dr. DUPRÉ, F.R.S.

1st day's urine. Tested one ounce direct by Reinsch's process; arsenic very readily detected.

2nd day's urine. Tested one ounce direct by Reinsch's process; arsenic readily detected.

3rd day's urine. Tested one ounce direct by Reinsch's process; arsenic just detectable.

5th day's urine. First experiment: tested two ounces direct; arsenic not detectable. Second experiment: tested two ounces, evaporated and distilled with hydrochloric acid, by Reinsch's process; arsenic just detectable.

6th day's urine. Tested two ounces, evaporated and distilled with hydrochloric acid, by Reinsch's test; arsenic not detectable.

8th day's urine. Tested two ounces, evaporated and distilled with hydrochloric acid; arsenic not detectable.

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It is possible that by taking a larger quantity of urine arsenic might have been detected for some little time longer, but, judging from the great rate at which the quantity eliminated diminished, it would not, in my opinion, have shown arsenic for more than one or, at most, two days longer.

A two-ounce bottle contained a few drops of a slightly tinted liquid smelling of lavender, and having an alkaline reaction. The liquid was found to contain equivalent to 3·9 grains of arsenious acid per ounce.

Several of the samples of urine were tested specially for arsenic acid, as it was considered possible that some of the arsenic might have become oxidised and be eliminated as arsenic acid, but no trace was found.

Before evaporating the urine it was in each case rendered slightly alkaline by the addition of pure sodic hydrate.

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# OFFICIAL REPORTS.

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# REPORT

OF THE

# POST-MORTEM EXAMINATIONS MADE IN 1888.

By Dr. HEBB.

| | | | | |
|---|---|---|---|---|
| Cases recorded: | | | 195 | |
| Males | | | 111 | |
| Females | | | 84 | |
| General diseases: | | | | |
| Diphtheria | | | 13 | |
| Enteric fever | | | 4 | |
| Pyæmia | | | 5 | |
| Tuberculosis | | | 10 | |
| Rickets | | | 1 | |
| | | | | 33 |
| Diseases of the nervous system | | | | |
| Meningitis | | | 7 | |
| Hæmorrhage | | | 6 | |
| Softening | | | 1 | |
| Tumour | | | 1 | |
| Epilepsy | | | 1 | |
| | | | | 16 |
| Diseases of the circulatory system: | | | | |
| Acute endocarditis | | | 2 | |
| Chronic: | | | | |
| Aortic | 1 | | | |
| Aortic and mitral | 4 | | | |
| Mitral | 7 | | 13 | |
| Mitral and tricuspid | 1 | | | |
| Aortitis | | | 5 | |
| Aneurysm of heart | | | 1 | |
| Pericarditis | | | 1 | |
| | | | | 22 |

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| | | |
|---|---|---|
| **Diseases of the respiratory system:** | | |
| Bronchitis | 8 | |
| Chronic bronchitis and emphysema | 12 | |
| Pneumonia | 13 | |
| Broncho-pneumonia | 5 | |
| Phthisis | 14 | |
| Empyema | 1 | |
| | | 53 |
| **Diseases of the digestive system:** | | |
| Ulcerative pharyngitis | 4 | |
| Ulceration of duodenum | 2 | |
| Ulcerative colitis | 1 | |
| Cirrhosis | 2 | |
| Hepatitis interstitialis | 1 | |
| Melanotic sarcoma of liver | 1 | |
| Cancer of pharynx | 1 | |
| „ of œsophagus | 2 | |
| „ of stomach | 2 | |
| „ of intestine | 2 | |
| „ of bile-duct | 2 | |
| „ of pancreas | 1 | |
| Peritonitis | 5 | |
| Diarrhœa with emaciation | 5 | |
| | | 31 |
| **Diseases of the lymphatic system:** | | |
| Cancer of cervical glands | 1 | |
| Epithelioma | 1 | |
| | | 2 |
| **Diseases of the adrenals:** | | |
| Addison's disease | | 1 |
| **Diseases of the urinary system:** | | |
| Chronic renal | 7 | |
| Extravasation of urine | 1 | |
| Calculus | 2 | |
| Cancer | 2 | |
| | | 12 |
| **Diseases of the generative system:** | | |
| Pelvic cellulitis | 1 | |
| Myoma uteri | 1 | |
| Cancer of uterus | 1 | |
| „ of ovary | 2 | |
| Stillbirth | 1 | |
| Extra-uterine fœtation | 1 | |
| | | 7 |
| **Diseases of the ear:** | | |
| Otitis | | 3 |

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| | | |
|---|---|---|
| **Diseases of the organs of locomotion:** | | |
| Necrosis of spine | 1 | |
| Caries of spine | 2 | |
| Morbus coxæ | 2 | |
| Necrosis of scapula | 1 | |
| | | 6 |
| **Injuries:** | | |
| Cut throat | 1 | |
| Revolver wound | 1 | |
| Oxalic acid poisoning | 1 | |
| Fracture of skull | 1 | |
| „ of spine | 1 | |
| „ of pelvis | 1 | |
| „ of arm | 1 | |
| | | 7 |
| **Malformations:** | | |
| Spina bifida | 1 | |
| Defect of diaphragm | 1 | |
| | | 2 |

*Short Notes indicating the more important Complications, &c. of the foregoing Cases. The Numbers, from* 258—400 *refer to the folios in P.M. Book, vol. iv, from* 1—96, *to those in vol. v.*

## General Diseases.

***Diphtheria.*** — (258) (264) (383) (384) Membrane from fauces to bronchi. (396) Membrane on fauces only. (1) No membrane; bronchitis. (29) Membrane from fauces to bronchi; acute nephritis. (38) (44) (69) Membrane from fauces to bronchi. (68) Membrane from nares to bronchi. (72) Membrane from nares to fauces. (90) Membrane from nares to bronchi.

***Pyæmia.***—(347) After synovitis. (356) After pelvic cellulitis. (359) After stricture of urethra. (12) Causation undetermined. Most prominent symptom epistaxis. Pus in joints and in left middle ear. Some recent vegetations in mitral valve. (32) After operation for fibrous ankylosis of jaw.

***Tuberculosis.***—(343) Tubercular meningitis; ulceration of intestines. (397) Caseations in brain; ulceration of intes-



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tines; mesenteric glands large and caseous. (14) Tubercular meningitis; tubercles in right lung only. (20) Tubercular meningitis. (55) Tubercular meningitis. (76) Tubercular meningitis. Ulcerations of intestines.

*Enteric fever.*—(323) Chronic endocarditis; ulceration of larynx. (332) Pleuro-pneumonia; Eleven patches of sclerosis of cerebral cortex. (The boy, æt. 10, was said to be very intelligent.) (26) Walls of heart very thin, soft, and pale. (73) Peritonitis after perforation; myoma uteri; cystic ovaries; parovarian cyst; sub-involution of uterus.

## Nervous System.

*Softening.*—(270) Yellow softening of cuneus and adjacent parts of precuneus and marginal convolution; vessels of pia mater atheromatous; enlarged prostate.

*Hæmorrhage.*—(281) Both optic thalami and marginal convolutions; causation, fall on head; no fracture. (294) Arachnoid; pneumonia; ovaries cystic; chronic peri-ovaritis. (331) Into basal ganglia and pons. (337) Into basal ganglia and pons. (34) Into basal ganglia; chronic endarteritis of vessels of pia mater; left ventricle of heart much hypertrophied; kidneys not noteworthy. (71) Into basal ganglia and pons; chronic endarteritis; uterine myomata. Chronic periovaritis.

*Meningitis.*—(283) After otitis. (288) Causation undetermined; the meningitis was accompanied by patches of softening; cord *nil.* (337) Cerebro-spinal; in brain almost entirely vertical; (365) Tubercular, but no tubercle or caseous matter elsewhere. Both middle ears full of purulent fluid. (373) Almost entirely vertical. (6) After otitis; cord *nil*; acute nephritis. (56) Cerebro-spinal, chiefly vertical.

*Tumour.*—(49) Glioma of base.

*Epilepsy.*—(64) After trephining.

## Circulatory System.

*Acute endocarditis.*—(302) Ulcerative valvulitis, aortic and mitral. Double uterus. (18) Ulcerative valvulitis, aortic and mitral. Phthisis.

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***Chronic endocarditis.—Aortic:*** (15) Cyst from old hæmorrhage in corpus striatum. ***Mitral:*** (268) Stenosis. Suppurative bronchitis. (342) Stenosis. Recent vegetations on mitral and tricuspid. Adherent pericardium. Acute peritonitis. Infarcts of lungs. (355) Stenosis. Infarcts of lungs. Stenosis of os uteri. Chronic peri-ovaritis. (35) Stenosis with recent vegetations. Infarcts in spleen and kidneys. (43) Stenosis. (48) Stenosis. Erysipelas. (67) Stenosis with recent vegetations, aortic and mitral. (290) Incompetence of aortic and mitral, no valvulitis. Aortitis. (57) Stenosis. (39) Adherent pericardium. Chronic valvulitis of both with recent ulcerative endocarditis. (25) Adherent pericardium. Chronic valvulitis of both with recent vegetations on tricuspid, mitral, and aortic. ***Mitral and tricuspid*** (361) Stenosis of both. Infarcts in lungs and spleen.*

***Arteritis.***—(274) Calcareous atheroma. Kidneys red, granular. (335) The large and medium sized arteries atheromatous. Kidneys 9 and 10 oz, surface smooth, cortex large, colour pale red; prostate large. Hypertrophy of left ventricle of heart. This case is recorded in the 'Transactions of Clinical Society' as one of Raynaud's disease and diabetes.

***Aneurysm.***—(366) Aneurysm of cœliac axis; recent endocarditis. Causation, direct violence. (45) Aneurysm of aorta aortic valvulitis. (59) Aneurysm of aorta ulcerating into trachea and œsophagus; gangrene of lung; aortic valvulitis; left recurrent nerve adherent to wall of sac. Aneurysm of heart. (393) Valves competent; sacculation of wall of left ventricle with deposit of laminated fibrin. Chronic epididymitis.

***Pericarditis.***—(369) No endocarditis; left pleural sac almost obliterated after empyema, for which part of a rib was removed.

## Respiratory System.

***Acute bronchitis.***—(314) Age six weeks; both ovaries cystic.

***Chronic bronchitis and emphysema.***—(285) Considerable aortitis. (296) Æt. 26; several patches of yellow cortical

* It should be noticed that the tricuspid was affected in three cases.

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softening. Vessels of pia mater normal in appearance. Atrophy of right testicle. (322) Infarcts of lungs. Myoma uteri. (341) Patch of yellow cortical softening. (82) Age, 79; amputation of thigh; enlarged prostate.

*Pneumonia.*—(273) Age, 3; macroscopical appearances confirmed by the microscopical. (312) Meningitis. (368) Mitral stenosis; recent endocarditis. (27) Chronic valvulitis (aortic). (41) Yellow cortical softening. Atheroma of vessels of pia mater. (83) Age, 10 months. Macroscopical appearances confirmed by microscopical. Peyer's patches swollen and bright red, with one small ulcer.

*Broncho-pneumonia.*—(80) Chronic hydrocephalus.

*Phthisis.*—(282) Skin covered with syphilitic ulcers. (286) Laryngeal ulceration; ulceration of intestines. (303) Ulceration of colon. (304) Tubercular peritonitis. Ulceration of colon. Tubercular salpingitis. (310) Amyloid liver, spleen, and kidneys. (328) Ulceration of small intestine. (258) Ulceration of larynx and of intestines. (382) Empyema. Ulceration of intestines. (61) Ulceration of larynx and intestines. Scar of healed ulcer in stomach. (85) Sloughing of laryngeal mucosa. Ulcer of colon. Acute pleuritis.

*Empyema.*—(10) Pneumothorax. Pericarditis.

## Digestive Organs.

*Pharyngitis.*—(278) Thyroid cartilage and hyoid bone exposed. Pneumonia. (306) (324) (28). ? After scarlet fever.

*Ulceration of duodenum.*—(279) Two scars of healed ulcers of stomach. Chronic epididymitis. (79) Peritonitis.

*Cirrhosis of liver.*—(385) No history of alcohol.

*Melanotic sarcoma of liver.*—(77) After melanotic sarcoma of choroid. Diverticulum of ileum.

*Cancer.*—(340) Villous of stomach, limited to pyloric end, no secondary deposit. (4) Encephaloid of pyloric end. (399) Stricture of œsophagus, ulcerating into lung. (88) Stricture of œsophagus ulcerating into trachea. (17) Epithelioma of pharynx and palate. (13) Colloid of pancreas, with secondary growths in intestine. (94) Of bile-duct, with secondary deposits in lung; no invasion of liver.

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*Sarcoma.*—(380) Spindle-cell, springing from bile-duct. Peritonitis (inguinal).

*Ulcerative colitis.*—(265) Abscesses of liver which after perforating diaphragm opened into lung, and were partially evacuated through bronchus.

*Peritonitis.*—(301) After parturition. (2) Causation undetermined. Enlarged prostate. (37) Tubercular; one or two small ulcers in ileum, elsewhere no trace of tubercle. (52) After perforating ulcer of stomach. (62) Acute pleuritis; perforating ulcer of bladder. Myomata uteri.

*Hepatitis.* — (47) Interstitial, with fatty degeneration; eczema of buttocks, nates; age, 3 months.

*Stricture:* Of rectum.—(58) Inflammatory; amyloid stomach, liver, spleen, and kidneys. Of sigmoid flexure.—(317) Cancerous, secondary deposit in liver. Colotomy.

## Urinary System.

*Renal.*—(307) Large white kidneys; recent peri- and endocarditis. (333) Large white kidney contracting: cysts of epididymis. (338) Red granular; considerable thickening of coats of arteries, notably of coronary. (349) Small red granular; yellow softening of right cerebellum. (363) Small red granular. (364) Right kidney 6 oz., normal in appearance. Left 3 oz., a typical small red granular. Myomata uteri.

*Calculus.*—(350) Renal and urethral, age, 2. (386) Renal and vesical; lithotomy.

*Extravasation of urine.*—(7) No sign of stricture but considerable evidence of catheterism (not W. H.).

*Cancer.*—(375) Of right kidney, invading pancreas and liver; calculi in kidney and gall-bladder; peritonitis. (81) Lympho-sarcoma; secondary deposits in abdominal and pelvic glands, in liver, and in lungs.

## Adrenals.

*Addison's disease.*—(320) Adrenals normal; semilunar ganglia fibrosed and small; no caseation anywhere.

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### Lymphatic System.

(276) Epithelioma of cervical glands. (352) Cancer of cervical glands, which pressed on and invaded larynx.

### Generative System.

(391) Pelvic cellulitis; cardiac polypus; large white kidneys; amyloid spleen. (259) Myoma uteri; hysterectomy. (344) Cancer of ovary; peritonitis. (87) Cancer of ovary; secondary deposits in liver. (345) Extra-uterine fœtation; right tube much elongated, and stretching over sac; fœtus macerated: bones much distorted from pressure.

### Organs of Locomotion.

(263) Morbus coxæ; tubercular meningitis; morbus coxæ; amputation; phthisis; adherent pericardium; amyloid liver and kidney. (334) Caries of spine; dorso-lumbar region; large white kidneys. (70) Caries of spine; lumbo-sacral region; tubercular peritonitis; amyloid liver and spleen. (354) Necrosis of spine from seventh cervical to eleventh dorsal vertebra; acute pleuritis; liver, spleen, and kidneys amyloid. (30) Necrosis of scapula; amyloid liver, spleen, and kidneys.

### Diseases of the Ear.

(93) Otitis media; meningitis; ante-flexion of uterus. (96) Otitis media; abscess of cerebellum.

### Malformations.

(387) Spina bifida; lumbo-sacral region; dilatation of central canal in cervical region; chronic hydrocephalus. (95) Defect of diaphragm; hernia of stomach into left thorax.

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# MEDICAL REGISTRAR'S REPORT FOR THE YEAR 1888.

By W. A. WILLS.

| | | | |
|---|---|---|---|
| Number of patients in Hospital, Jan. 1st, 1888 | ... | ... | 77 |
| „ „ „ Dec. 31st, 1888 | ... | ... | 73 |
| Treated during the year ... ... ... | ... | ... | 1204 |
| Admitted to Medical Wards during the year ... | ... | ... | 1127 |
| Of these—Males ... ... ... | ... | 627 | |
| Females ... ... ... | ... | 500 | |
| | | — | 1127 |
| Average number of patients in Hospital | ... | ... | 67·25 |
| Average stay in Hospital of each patient | ... | ... | 25·09 days. |
| Recovered or relieved: | | | |
| Males ... ... ... ... | ... | 506 | |
| Females ... ... .. ... | ... | 408 | |
| | | — | 914 |
| Unrelieved, including those sent to Surgical or Obstetrical Wards: | | | |
| Males ... ... ... ... ... | ... | 36 | |
| Females ... ... ... ... | ... | 28 | |
| | | — | 64 |
| Died: | | | |
| Males ... ... ... ... ... | ... | 85 | |
| Females ... ... ... ... | ... | 64 | |
| | | — | 149 |

The mortality during the year was 12·37 per cent.

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## Table A.

| DISEASE. | Jan. to March. | April to June. | July to Sept. | Oct. to Dec. | Sex. Males | Sex. Females. | Sex. Total. | Age. Under 5 yrs. | Age. 5—10. | Age. 10—20. | Age. 20—30. | Age. 30—40. | Age. 40—50. | Age. 50—60. | Age. Over 60. | Result. Death. | Result. Unrelieved. | Result. Relieved. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Diseases:** | | | | | | | | | | | | | | | | | | | |
| Group A: | | | | | | | | | | | | | | | | | | | |
| Scarlatina | 8 | 2 | 1 | 1 | 7 | 5 | 12 | 5 | 3 | 3 | 1 | ... | ... | ... | ... | 3 | 1 | 8 | |
| Morbilli | ... | 3 | 1 | ... | ... | 4 | 4 | 1 | 1 | ... | 2 | ... | ... | ... | ... | ... | ... | 4 | |
| Rötheln | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Enteric fever | 20 | 11 | 6 | 2 | 21 | 18 | 39 | 4 | 10 | 11 | 11 | 3 | ... | ... | ... | 4 | ... | 35 | *vide* Table B |
| Diphtheria | 2 | 8 | 11 | 19 | 11 | 29 | 40 | 14 | 15 | 8 | 2 | 1 | ... | ... | ... | 14 | ... | 26 | |
| Febricula | ... | 1 | ... | 1 | 2 | ... | 2 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | |
| Intermittent fever | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Erysipelas | 5 | 3 | 2 | ... | 7 | 3 | 10 | ... | ... | 1 | 3 | 3 | 1 | ... | 2 | 1 | ... | 9 | |
| Parotitis | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Pertussis | 2 | 2 | 2 | ... | 3 | 3 | 6 | 5 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 6 | |
| Pyæmia | ... | ... | 1 | 1 | ... | 2 | 2 | 1 | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 | ... | |
| Syphilis, congenital | 1 | 2 | ... | 2 | 2 | 3 | 5 | 5 | ... | ... | ... | ... | ... | ... | ... | 3 | 1 | 1 | |
| „ acquired | ... | 1 | ... | 2 | 2 | 1 | 3 | ... | ... | 1 | 1 | ... | ... | 1 | ... | ... | ... | 3 | |
| Typhus | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | |
| Tetanus | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Group B: | | | | | | | | | | | | | | | | | | | |
| *Poisons:* | | | | | | | | | | | | | | | | | | | |
| Alcohol | 2 | 1 | ... | 1 | 3 | 1 | 4 | ... | ... | ... | ... | 1 | 2 | ... | 1 | ... | ... | 4 | |
| Belladonna | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | ... | ... | .. | ... | ... | 1 | |
| Camphor | ... | ... | 1 | ... | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Lead | 1 | 3 | 5 | 1 | 10 | ... | 10 | ... | ... | ... | 3 | 4 | 2 | 1 | ... | ... | ... | ... | |
| Opium | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Oxalic acid | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | |
| Winkles | 1 | ... | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Group C: | | | | | | | | | | | | | | | | | | | |
| *Developmental diseases:* | | | | | | | | | | | | | | | | | | | |
| Debility | 3 | 3 | 4 | 1 | 6 | 5 | 11 | 2 | 1 | 3 | 3 | ... | ... | 1 | 1 | ... | ... | 11 | |
| Group D: | | | | | | | | | | | | | | | | | | | |
| *Not classified:* | | | | | | | | | | | | | | | | | | | |
| Acute rheumatism | 17 | 27 | 10 | 11 | 38 | 27 | 65 | 1 | 5 | 18 | 29 | 9 | 3 | ... | ... | 2 | ... | 63 | *vide* Table C |
| Rheumatism, including subacute and chronic | 5 | 5 | 11 | 5 | 15 | 11 | 26 | ... | ... | 3 | 8 | 3 | 5 | 6 | 1 | ... | ... | 26 | |
| Gout | ... | ... | 2 | 2 | 4 | ... | 4 | ... | ... | ... | ... | ... | 3 | ... | 1 | ... | ... | 4 | |
| Tuberculosis | 5 | 3 | 7 | 3 | 10 | 8 | 18 | 7 | 7 | 3 | ... | 1 | ... | ... | ... | 13 | 2 | 3 | |
| Rickets | 1 | 2 | 2 | ... | ... | 5 | 5 | 5 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 4 | |
| Myxœdema | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Anæmia | 10 | 6 | 9 | 6 | 3 | 28 | 31 | ... | ... | 15 | 13 | 2 | 1 | ... | ... | ... | 1 | 30 | |
| Diabetes | 1 | 1 | 1 | 1 | 3 | 1 | 4 | ... | ... | 2 | ... | ... | ... | 2 | ... | 3 | ... | 1 | |
| Leucocythæmia | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |

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TABLE A—*continued.*

| DISEASE. | Jan. to March. | April to June. | July to Sept. | Oct. to Dec. | Sex. Males. | Females. | Total. | Age. Under 5 yrs. | 5—10. | 10—20. | 20—30. | 30—40. | 40—50 | 50—60. | Over 60. | Result. Death. | Unrelieved. | Relieved. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISEASES OF THE NERVOUS SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| *Brain:* | | | | | | | | | | | | | | | | | | | |
| Hæmorrhage | 1 | ... | ... | 1 | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | ... | ... | |
| Hemiplegia | 4 | 5 | 2 | 4 | 10 | 5 | 15 | ... | ... | ... | 3 | ... | 3 | 3 | 6 | 4 | 3 | 8 | |
| Tumour | 1 | ... | ... | 2 | 3 | ... | 3 | ... | ... | ... | ... | ... | 2 | 1 | ... | 1 | ... | 2 | |
| Hydrocephalus | ... | 1 | 2 | 2 | 3 | 2 | 5 | 5 | ... | ... | ... | ... | ... | ... | ... | 2 | 3 | ... | |
| Cerebellar abscess | ... | ... | 1 | ... | ... | 1 | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | |
| Meningitis | 2 | ... | 1 | 1 | ... | 4 | 4 | 1 | 1 | 1 | 1 | ... | ... | ... | ... | 4 | ... | ... | |
| Concussion | 1 | ... | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | .. | ... | 1 | |
| Cerebro-spinal sclerosis | 2 | 1 | ... | ... | 2 | 1 | 3 | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... | 1 | 2 | |
| *Cord:* | | | | | | | | | | | | | | | | | | | |
| Myelitis | ... | ... | 1 | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | |
| Anterior poliomyelitis | 1 | 2 | 2 | ... | 3 | 2 | 5 | 4 | 1 | ... | ... | ... | ... | ... | ... | ... | 4 | 1 | |
| Spastic paralysis | 4 | 4 | 1 | ... | 9 | ... | 9 | ... | ... | 1 | ... | 4 | 4 | ... | ... | ... | 1 | 8 | |
| Tabes dorsalis | 2 | ... | 2 | ... | 4 | ... | 4 | ... | ... | ... | 1 | ... | 2 | 1 | ... | ... | ... | 4 | |
| Spinal paralysis | ... | ... | 1 | ... | ... | 1 | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Pseudo-hypertrophic paralysis | ... | ... | ... | 1 | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Meningitis | 1 | 1 | 1 | ... | 3 | ... | 3 | ... | ... | ... | ... | 2 | ... | 1 | ... | 1 | ... | 2 | |
| Sciatica | 4 | 2 | 1 | 3 | 10 | ... | 10 | ... | ... | ... | ... | 1 | 4 | 3 | 2 | ... | 1 | 9 | |
| Diphtheritic paralysis | ... | ... | 1 | ... | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Laryngismus stridulus | ... | 1 | 2 | 1 | 3 | 1 | 4 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 3 | |
| Epilepsy | 8 | 3 | 1 | 4 | 10 | 6 | 16 | ... | 2 | 2 | 1 | 5 | 4 | 1 | 1 | ... | 1 | 15 | |
| Infantile convulsions | ... | ... | 5 | 2 | 4 | 3 | 7 | 6 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 7 | |
| Chorea | 7 | 5 | 4 | 3 | 6 | 13 | 19 | ... | 5 | 14 | ... | ... | ... | ... | ... | ... | ... | 19 | *vide* Table D |
| Hysteria | 4 | 3 | 4 | 4 | 2 | 13 | 15 | ... | ... | 4 | 5 | 1 | 3 | 2 | ... | ... | ... | 15 | |
| Paralysis agitans | ... | 1 | 1 | ... | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | 1 | |
| Nervous shock | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | |
| *Mental diseases:* | | | | | | | | | | | | | | | | | | | |
| Dementia | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | |
| Melancholia | 2 | ... | ... | ... | 1 | 1 | 2 | ... | ... | 1 | . | ... | ... | 1 | ... | ... | 1 | 1 | |
| Mania | ... | 1 | ... | ... | 1 | 1 | 2 | ... | ... | ... | . | 2 | ... | ... | ... | ... | 2 | ... | |
| General paralysis | ... | 2 | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 2 | ... | |
| Delirium tremens | 1 | 5 | 2 | 1 | 7 | 2 | 9 | ... | ... | ... | ... | 3 | 3 | 2 | 1 | 1 | ... | 8 | |
| **DISEASES OF THE CIRCULATORY SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| Dilatation of heart | 2 | 1 | 2 | ... | 1 | 4 | 5 | ... | ... | ... | 1 | ... | 4 | ... | ... | ... | ... | 5 | |
| Endocarditis (not arising in hospital): | | | | | | | | | | | | | | | | | | | |
| *Mitral:* | | | | | | | | | | | | | | | | | | | |
| 1. With presyst. murmur | 8 | 2 | ... | ... | 2 | 8 | 10 | ... | ... | 3 | 4 | 1 | 2 | ... | ... | ... | ... | 10 | |
| 2. With systolic murmur | 5 | 3 | ... | ... | 7 | 7 | 14 | 1 | 2 | 6 | 2 | ... | 2 | 1 | ... | 1 | ... | 13 | |
| 3. With double murmur | 1 | 4 | 5 | 9 | 6 | 13 | 19 | ... | ... | 8 | 3 | 3 | 3 | 2 | ... | 5 | ... | 14 | |



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## TABLE A—*continued.*

| DISEASE. | Jan. to March. | April to June. | July to Sept. | Oct. to Dec. | Sex. Males. | Sex. Females. | Sex. Total. | Age. Under 5 yrs. | Age. 5—10. | Age. 10—20. | Age. 20—30. | Age. 30—40. | Age. 40—50. | Age. 50—60. | Age. Over 60. | Result. Death. | Result. Unrelieved. | Result. Relieved. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISEASES OF THE CIRCULATORY SYSTEM—*continued.*** | | | | | | | | | | | | | | | | | | | |
| *Aortic:* | | | | | | | | | | | | | | | | | | | |
| 1. With systolic murmur | ... | ... | .. | 1 | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | .. | ... | ... | 1 | |
| 2. With diastolic murmur | 1 | 1 | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | 2 | ... | ... | ... | 1 | ... | 1 | |
| 3. With double murmur | 4 | 3 | 6 | 2 | 14 | 1 | 15 | ... | ... | ... | 4 | 5 | 5 | 1 | ... | 1 | 2 | 12 | |
| Ulcerative | 1 | 1 | 1 | ... | 2 | 1 | 3 | ... | ... | ... | 2 | 1 | ... | ... | ... | 3 | ... | ... | |
| Cyanosis | 2 | ... | 1 | ... | 1 | 2 | 3 | 1 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | 3 | |
| Fatty degeneration | ... | 3 | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | 3 | |
| Aneurysm, thoracic | . | 1 | 1 | 4 | 6 | ... | 6 | ... | ... | ... | ... | 1 | 4 | ... | 1 | 2 | ... | 4 | |
| Angina pectoris | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... | ... | ... | . | ... | ... | 1 | ... | ... | 1 | |
| *Diseases of the Thyroid:* | | | | | | | | | | | | | | | | | | | |
| Exophthalmic goitre | 1 | 2 | ... | 1 | 1 | 3 | 4 | ... | ... | 1 | 2 | ... | ... | 1 | ... | ... | ... | 4 | |
| **DISEASES OF THE RESPIRATORY SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| Laryngitis | ... | ... | 1 | 2 | 2 | 1 | 3 | ... | 2 | ... | ... | ... | 1 | ... | ... | ... | ... | 3 | |
| Malignant disease of the larynx | 1 | .. | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | .. | .. | |
| Bronchitis: | | | | | | | | | | | | | | | | | | | |
| 1. Acute | 5 | 5 | 10 | 7 | 16 | 11 | 27 | 20 | 4 | ... | 1 | 2 | ... | ... | ... | 1 | ... | 26 | |
| 2. Chronic | 17 | 12 | 6 | 10 | 24 | 21 | 45 | 1 | ... | ... | 3 | 4 | 11 | 17 | 9 | 8 | ... | 37 | |
| Pneumonia: | | | | | | | | | | | | | | | | | | | |
| 1. Lobar | 15 | 19 | 8 | 7 | 34 | 15 | 49 | 1 | 7 | 11 | 8 | 14 | 7 | 1 | ... | 8 | ... | 41 | |
| 2. Lobular | 13 | 16 | 8 | 17 | 39 | 15 | 54 | 44 | 10 | ... | ... | ... | ... | ... | ... | 9 | 2 | 43 | |
| Pleurisy: | | | | | | | | | | | | | | | | | | | |
| 1. Without effusion | 1 | 4 | 1 | 1 | 5 | 2 | 7 | ... | ... | 2 | 1 | 2 | 1 | 1 | ... | ... | ... | 7 | |
| 2. With effusion | 5 | 10 | 4 | 4 | 16 | 7 | 23 | ... | 1 | 4 | 8 | 5 | 1 | 3 | 1 | 1 | 2 | 20 | |
| 3. Empyema | 1 | 4 | 2 | ... | 6 | 1 | 7 | 1 | 2 | 1 | 1 | ... | ... | 2 | ... | 2 | ... | 5 | |
| Phthisis | 23 | 18 | 18 | 15 | 47 | 27 | 74 | 1 | ... | 8 | 25 | 26 | 12 | 2 | ... | 16 | 11 | 47 | |
| Malignant disease of lung | 1 | ... | 1 | ... | 2 | ... | 2 | ... | ... | ... | ... | 2 | ... | ... | ... | 1 | 1 | ... | |
| Mediastinal tumour | 1 | 3 | 3 | 1 | 5 | 3 | 8 | ... | ... | 1 | 4 | 2 | 1 | ... | ... | 1 | 1 | 6 | |
| Pneumo-thorax | 2 | 1 | 1 | ... | 4 | .. | 4 | ... | ... | ... | ... | 4 | .. | ... | ... | 2 | ... | 2 | |
| **DISEASES OF THE DIGESTIVE SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| *Mouth:* | | | | | | | | | | | | | | | | | | | |
| Stomatitis | ... | ... | ... | 3 | 1 | 2 | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 3 | |
| *Pharynx and Œsophagus:* | | | | | | | | | | | | | | | | | | | |
| Tonsillitis, acute | 13 | 13 | 14 | 17 | 24 | 33 | 57 | 3 | 6 | 24 | 18 | 6 | 1 | ... | ... | ... | ... | 57 | |
| „ chronic | ... | ... | 3 | ... | 3 | ... | 3 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 3 | |
| Post-pharyngeal abscess | ... | 1 | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Stricture | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | |

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## TABLE A—*continued.*

| DISEASE. | Jan. to March. | April to June. | July to Sept. | Oct. to Dec. | Sex. Males. | Females. | Total. | Age. Under 5 yrs. | 5—10. | 10—20. | 20—30. | 30—40. | 40—50 | 50—60. | Over 60. | Result. Death. | Unrelieved. | Relieved. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISEASES OF THE DIGESTIVE SYSTEM—*continued.*** | | | | | | | | | | | | | | | | | | | |
| ***Stomach:*** | | | | | | | | | | | | | | | | | | | |
| Dyspepsia | 2 | 1 | 4 | 1 | ... | 8 | 8 | 1 | 1 | 1 | 3 | 1 | 1 | ... | ... | ... | ... | 8 | |
| Ulcer | 10 | 4 | 5 | 8 | 8 | 19 | 27 | ... | 1 | 3 | 14 | 7 | 1 | 1 | ... | 1 | ... | 26 | |
| Carcinoma | 1 | 2 | ... | 1 | 3 | 1 | 4 | ... | ... | ... | ... | 1 | ... | 1 | 2 | 1 | 1 | 2 | |
| Dilatation | ... | 1 | 1 | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | 1 | 1 | |
| ***Intestines:*** | | | | | | | | | | | | | | | | | | | |
| Diarrhœa | 2 | 4 | 9 | 3 | 9 | 9 | 18 | 11 | ... | 2 | 2 | ... | 1 | 1 | 1 | 1 | ... | 17 | |
| Constipation | ... | 1 | 1 | ... | 1 | 1 | 2 | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | |
| Colic | 1 | 3 | 1 | 2 | 5 | 2 | 7 | ... | 1 | 2 | 2 | 1 | ... | 1 | ... | ... | ... | 7 | |
| Typhlitis | ... | ... | 3 | ... | ... | 3 | 3 | ... | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | 3 | |
| Enteritis | ... | ... | 1 | ... | 1 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | |
| Malignant disease of colon | 1 | 1 | .. | ... | 1 | 1 | 2 | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | 1 | ... | |
| Fistula in ano | 1 | ... | 1 | ... | 2 | ... | 2 | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 1 | 1 | |
| ***Liver:*** | | | | | | | | | | | | | | | | | | | |
| Jaundice | 5 | 3 | 2 | 3 | 9 | 4 | 13 | 1 | ... | 2 | 2 | 3 | ... | 2 | 3 | *1 | ... | 12 | *No P.M. |
| Gall-stone colic | ... | 2 | ... | ... | 1 | 1 | 2 | ... | ... | .. | ... | ... | 1 | 1 | ... | ... | ... | 2 | |
| Cirrhosis | 4 | 2 | 4 | 1 | 9 | 2 | 11 | ... | ... | ... | 1 | ... | 7 | 2 | 1 | 1 | ... | 10 | |
| Carcinoma | ... | ... | 1 | 3 | 2 | 2 | 4 | ... | ... | ... | ... | ... | 2 | 2 | ... | 3 | ... | 1 | |
| Pylephlebitis | 1 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| ***Pancreas:*** | | | | | | | | | | | | | | | | | | | |
| Malignant disease | ... | 1 | 1 | ... | ... | 2 | 2 | ... | ... | ... | ... | ... | 2 | ... | ... | 1 | ... | 1 | |
| ***Peritoneum:*** | | | | | | | | | | | | | | | | | | | |
| Peritonitis, acute | ... | ... | 1 | 1 | 2 | ... | 2 | ... | ... | ... | ... | ... | 1 | 1 | ... | 2 | ... | ... | |
| „ chronic | 1 | 1 | 1 | 1 | 4 | ... | 4 | 1 | 2 | ... | 1 | ... | ... | ... | ... | ... | 1 | 3 | |
| Ascites | 1 | 1 | 1 | 1 | 1 | 3 | 4 | ... | ... | 1 | ... | 1 | ... | 1 | 1 | *2 | ... | 2 | *No P.M. |
| **DISEASES OF THE LYMPHATIC SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| ***Spleen:*** | | | | | | | | | | | | | | | | | | | |
| Malignant disease | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | |
| ***Lymphatics:*** | | | | | | | | | | | | | | | | | | | |
| Lymphangitis of face | ... | ... | ... | 2 | 1 | 1 | 2 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | |
| Enlargement of iliac glands | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | |
| **DISEASES OF THE SUPRARENAL CAPSULES:** | | | | | | | | | | | | | | | | | | | |
| Addison's disease | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | |

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TABLE A—*continued.*

| DISEASE. | Jan. to March. | April to June. | July to Sept. | Oct. to Dec. | Sex. Males. | Sex. Females. | Sex. Total. | Age. Under 5 yrs. | Age. 5—10. | Age. 10—20. | Age. 20—30. | Age. 30—40. | Age. 40—50. | Age. 50—60. | Age. Over 60. | Result. Death. | Result. Unrelieved. | Result. Relieved. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISEASES OF THE URINARY SYSTEM:** | | | | | | | | | | | | | | | | | | | |
| Acute nephritis | 3 | ... | 1 | 2 | 3 | 3 | 6 | 1 | 1 | 3 | 1 | ... | ... | ... | ... | ... | ... | 6 | |
| Chronic nephritis: | | | | | | | | | | | | | | | | | | | |
| 1. Large white | 5 | 1 | 5 | 2 | 9 | 4 | 13 | 2 | 2 | 1 | 4 | 3 | 1 | ... | ... | 1 | 1 | 11 | |
| 2. Contracted | 4 | 6 | 2 | ... | 8 | 4 | 12 | ... | ... | ... | 1 | 1 | 5 | 3 | 2 | 5 | ... | 7 | |
| Floating kidney | 1 | ... | ... | ... | ... | 1 | 1 | ... | .. | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | |
| Cystic kidney | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | .. | 1 | ... | ... | |
| Renal calculus | 3 | 6 | 5 | 3 | 7 | 10 | 17 | ... | 2 | 1 | 5 | 6 | 2 | 1 | ... | ... | 2 | 15 | |
| Malignant disease of bladder | ... | ... | 1 | .. | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | |
| **DISEASES OF THE SKIN:** | | | | | | | | | | | | | | | | | | | |
| Eczema | 2 | ... | ... | ... | 1 | 1 | 2 | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | 2 | |
| Psoriasis | 1 | ... | ... | 1 | 2 | ... | 2 | ... | ... | .. | ... | 1 | 1 | ... | ... | ... | ... | 2 | |
| Pemphigus | ... | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | |
| Herpes zoster | ... | 1 | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Erythema | ... | ... | 1 | . | 1 | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | |
| Urticaria hæmorrhagica | ... | 1 | ... | 1 | 1 | 1 | 2 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | |
| **DISEASES OF WOMEN:** | | | | | | | | | | | | | | | | | | | |
| Acute ovaritis | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | |
| Carcinoma of the ovary | ... | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | |
| Pelvic cellulitis | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | |
| Uterine complaints (transferred to Arden) | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | |
| **VARIOUS:** | | | | | | | | | | | | | | | | | | | |
| Pregnancy | ... | 1 | 1 | ... | ... | 2 | 2 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 2 | ... | |
| Strumous dactylitis | 2 | ... | ... | ... | 1 | 1 | 2 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | 1 | |
| „ disease of knee | ... | ... | 2 | ... | 1 | 1 | 2 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | 1 | |
| Periostitis of leg | ... | ... | 1 | 1 | 2 | ... | 2 | ... | 1 | ... | 1 | .. | ... | ... | ... | ... | 1 | 1 | |
| Cervical glandular abscess | ... | ... | 1 | ... | 1 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Marasmus | 1 | ... | 3 | 1 | 5 | ... | 5 | 4 | 1 | ... | ... | ... | ... | ... | ... | 2 | ... | 3 | |
| Otorrhœa | ... | ... | 1 | 1 | 1 | 1 | 2 | .. | 1 | 1 | .. | ... | ... | ... | .. | ... | ... | 2 | |
| Conjunctivitis | ... | ... | 1 | ... | 1 | .. | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| Facial neuralgia | 1 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | |
| Nil | ... | 1 | 2 | 1 | 2 | 2 | 4 | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 4 | |

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## Table B.—*Enteric Fever.*

Thirty-nine cases of enteric fever were treated in the hospital during the year 1888.

The average stay in the hospital of each patient was 35·5 days.

The chief feature in the present series of cases is the large proportion of those attached who suffered from constipation. There were fifteen cases in which constipation persisted throughout the attack. There were only six cases in which diarrhœa was at all profuse. Four cases suffered relapse. In one case there was hæmorrhage from the bowel.

Four deaths occurred—two males, two females. The cause of death in the latter was in one case perforation of the bowel, in the other hyperpyrexia; in the former, pneumonia and bronchitis.

In six instances two or more persons from the same household were admitted with enteric fever into the hospital at a short interval of time. In one of these instances five persons were attacked.

The cause assigned was in twelve cases bad drainage, in the others no cause could be ascertained.

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TABLE B—*continued.*

| No. and name. | Month admitted | Sex. | Age. | Onset. | Character. | Fever. | Days in hosp. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 W. S. | Dec., 1887 | M. | 27 | Epistaxis, cough | Admitted at end of 3rd week; slight diarrhœa; albuminuria came on soon after admission | 8 days' fever; highest temp. 102° | 39 | Recov. | — | — |
| 2 A. G. | Jan. | F. | 12 | Headache, pain in back | Admitted in 3rd week; no symptoms while in hospital | 5 days' fever; highest temp. 100·8° | 36 | „ | — | Mother and one sister also in hospital with enteric fever. Very bad smells in house, drain stopped for 14 days just previously. |
| 3 D. M. | „ | M. | 20 | Pains in chest, cough, weakness; epistaxis on the day before admission | Admitted at end of 2nd week; rose spots; constipation all through attack | 14 days' fever; highest temp. 104° | 52 | „ | Purgative enemata | Albuminuria at first. |
| 4 L. H. | „ | F. | 5 | Sudden commencement with vomiting, headache, cough | Admitted on 5th day; very profuse diarrhœa at first; rose spots on abdomen when admitted; delirious at night | 22 days' fever; highest temp. 103·8° | 40 | „ | — | Temperature became normal 8 days after admission, then rose again after 2 days, and continued raised for 14 days. One brother in hospital with enteric fever a month ago. |
| 5 E. G. | „ | F. | 10 | Headache, general pains in limbs, diarrhœa, cough | Admitted on 8th day; constipation; marked bronchitis; rose spots | 3 weeks' fever; highest temp. 105·8° | 29 | „ | Purgative enemata | One sister (No. 2) and mother (23 in 1887 report) in hospital recently with enteric fever. |
| 6 J. M. | Feb. | M. | 16 | Sudden shivering; fell down unconscious for a short time; headache, vomiting, pains in limbs, sleeplessness, and cough | Admitted on 7th day; diarrhœa 6 to 8 times daily at first; afterwards constipated; rose spots; sick several times; delirious for some days | 15 days' fever; highest temp. 105° | 30 | „ | Purgative enemata during the latter part of attack | One brother died 8 weeks previous of "gastric fever." Brother of No. 23. |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 7<br>A. R | „ | M. | 3 | Gradual onset, with headache, pain in abdomen, diarrhœa; epistaxis several times | Admitted at commencement of 3rd week; diarrhœa about 6 times daily for a fortnight; rose spots; bronchitis | 14 days' fever; highest temp. 104° | 47 | „ | — | — |
| 8<br>M. A. B. | „ | F. | 28 | Gradual onset, with headache, vomiting, and diarrhœa | Admitted at end of 2nd week; very profuse diarrhœa; abdominal distention; sickness; hæmorrhage from bowel; rose spots | Temp. reached normal in 14 days, but continued to oscillate between 101·6° and normal for 3 weeks afterwards; highest temp. 104° | 33 | „ | Enemata Amyli & opio | Developed pericarditis during attack. Several children, Nos. 24, 25, 26, 27, were afterwards admitted from same house with enteric fever. |
| 9<br>R M. | „ | M. | 11 | Drowsy for the last 4 weeks; diarrhœa, headache | Admitted in 4th week; constipation throughout, much emaciated | 7 days' fever; highest temp. 104·6° | 27 | „ | — | Doubtful whether a case of enteric or tuberculosis; improved rapidly in hosp., gaining 10 lbs. in 3 weeks. |
| 10<br>E. T. | „ | F. | 8 | Cough, pain in chest; vomited on day of admission | Admitted on 4th day; abdominal distention; bronchitis; very slight diarrhœa; systolic murmur at apex of heart | 17 days' fever; highest temp. 103·8°, on admission | 33 | „ | — | Chicken-pox 7 weeks before; had never been well since. From same house as No. 33. |
| 11<br>E. M. | March | M. | 29 | Gradual loss of appetite; slight diarrhœa | Admitted at end of 3rd week; constipation | 8 days' fever; highest temp. 102° | 19 | „ | Purgative enemata | Works in stables. Mild case. |
| 12<br>E. C. | „ | F. | 24 | Gradual loss of appetite; constipation | Admitted at beginning of 2nd week; constipation at first, then profuse diarrhœa; delirious; very prostrate | 21 days' fever; highest temp. 104°. During relapse temp. was raised 18 days; highest temp. 104° | 84 | „ | Opium, brandy | Relapse in 5th week after eating grapes; no diarrhœa, but sickness. She was at a dance a few days before admission. |
| 13<br>J. F. | „ | F. | 23 | Headache, loss of appetite | Admitted at beginning of 2nd week; constipation; very prostrate; rose spots | 14 days' fever; highest temp. 104°. In relapse, 19 days' fever; highest temp. 105° | 64 | „ | Purgative enemata, brandy | Relapse 25 days after admission, in which she had a severe rigor, with temp. rising to 105°; rose spots. The sink was being repaired at her house just before her illness. |

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TABLE B—*continued.*

| No. and name. | Month admitted | Sex. | Age. | Onset. | Character. | Fever. | Days in hosp. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 W. B. | March | M. | 6 | Pain in abdomen, headache, slight cough | Admitted on 10th day; slight diarrhœa; rose spots; very slight attack | 10 days' fever; highest temp. 102·6°. In relapse, 24 days' fever; highest temp. 104° | 62 | Recov. | Sponged in the relapse | Relapse 11 days after admission; profuse diarrhœa; very prostrate; abdomen much distended; rose spots; sordes on teeth. Temp. remained at 103° for 12 days |
| 15 A. E. | „ | M. | 10 | Sudden giddiness and vomiting; pains in legs | Admitted on 4th day; constipation | 6 days' fever; highest temp. 103·4° | 23 | „ | — | Tonsillitis was a marked symptom. |
| 16 M. M. | „ | F. | 5 | Headache and abdominal pains; vomited several times 2 days before admission; delirious the night before | Admitted in 2nd week; constipation; slight bronchitis; rose spots | 7 days' fever; highest temp. 104·2°, on day of admission | 20 | „ | — | Slight case. |
| 17 T. B. | „ | M. | 25 | Shivering, pains all over, headache, weakness | Admitted at beginning of 3rd week; constipation | 12 days' fever; highest temp. 103·8° | 37 | „ | Purgative enemata | Slight case. |
| 18 M. M. | „ | F. | 9 | Malaise, diarrhœa | Admitted at beginning of 2nd week; rose spots | 5 days' fever; highest temp. 101·6° | 19 | „ | — | Slight case. |
| 19 A. T. | „ | M. | 24 | Weakness, diarrhœa | Admitted on 11th day; constipation; abdomen much distended; very tremulous; delirious; rose spots | 6 days' fever; highest temp. 105·8° | 6 | Death | Brandy | Death occurred chiefly from bronchitis. P.M.—There were found numerous enteric ulcers in small intestine; also ulceration of left vocal cord. |

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|---|---|---|---|---|---|---|---|---|---|---|
| 20<br>W. M. | „ | M. | 9 | Shivering, vomiting, headache, cough | Admitted on 5th day; slight diarrhœa; marked bronchitis; delirious; rose spots appeared 5 days after admission; spleen enlarged; was twice sick; bronchitis became very severe; motions were passed in bed last few days | 14 days' fever; highest temp. 105° | 14 | „ | Brandy | Death occurred mainly from pneumonia and bronchitis. P.M.—There were found numerous enteric ulcers in small intestine, a few in large; 11 patches of sclerosis in various parts of brain. It was ascertained that he had had "fits" for the last two years. |
| 21<br>R. G. | „ | M. | 32 | Suddenly attacked with vomiting, diarrhœa, pains in limbs, and a feeling of weakness | Admitted on 5th day; slight diarrhœa; abdomen distended; tongue furred; bronchitis; rose spots a few days after admission | 29 days' fever; highest temp. 104·4° | 60 | Recov. | — | A potman. In the room where he worked there was a constant smell from a public urinal. Developed physical signs of phthisis at both apices during the last month in hospital. |
| 22<br>F. P. | April | F. | 14 | Malaise, slight diarrhœa | Admitted on 11th day; profuse diarrhœa for first 4 days, afterwards constipation; rose spots on admission; tongue slightly furred; considerable bronchitis | 12 days' fever; highest temp. 105° | 38 | „ | Sponged, Liq. Strychniæ | — |
| 23<br>W. H. M. | „ | M. | 12 | Headache, vomiting, epistaxis, slight diarrhœa | Admitted on 7th day; constipation; numerous rose spots appeared on day after admission; bronchitis | 10 days' fever; highest temp. 103·6°. In relapse, 5 days' fever; highest temp. 102·6° | 30 | „ | — | One brother died last May of enteric fever; one brother and one sister ill at home with enteric fever; one brother (No. 6) in hospital 6 weeks ago with enteric fever. The family moved from the house in which they lived previously 14 days ago. |

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TABLE B—*continued.*

| No. and name. | Month admitted | Sex. | Age. | Onset. | Character. | Fever. | Days in hosp. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 W. B. | March | M. | 6 | Pain in abdomen, headache, slight cough | Admitted on 10th day; slight diarrhœa; rose spots; very slight attack | 10 days' fever; highest temp. 102·6°. In relapse, 24 days' fever; highest temp. 104° | 62 | Recov. | Sponged in the relapse | Relapse 11 days after admission; profuse diarrhœa; very prostrate; abdomen much distended; rose spots; sordes on teeth. Temp. remained at 103° for 12 days |
| 15 A. E. | „ | M. | 10 | Sudden giddiness and vomiting; pains in legs | Admitted on 4th day; constipation | 6 days' fever; highest temp. 103·4° | 23 | „ | — | Tonsillitis was a marked symptom. |
| 16 M. M. | „ | F. | 5 | Headache and abdominal pains; vomited several times 2 days before admission; delirious the night before | Admitted in 2nd week; constipation; slight bronchitis; rose spots | 7 days' fever; highest temp. 104·2°, on day of admission | 20 | „ | — | Slight case. |
| 17 T. B. | „ | M. | 25 | Shivering, pains all over, headache, weakness | Admitted at beginning of 3rd week; constipation | 12 days' fever; highest temp. 103·8° | 37 | „ | Purgative enemata | Slight case. |
| 18 M. M. | „ | F. | 9 | Malaise, diarrhœa | Admitted at beginning of 2nd week; rose spots | 5 days' fever; highest temp. 101·6° | 19 | „ | — | Slight case. |
| 19 A. T. | „ | M. | 24 | Weakness, diarrhœa | Admitted on 11th day; constipation; abdomen much distended; very tremulous; delirious; rose spots | 6 days' fever; highest temp. 105·8° | 6 | Death | Brandy | Death occurred chiefly from bronchitis. P.M.—There were found numerous enteric ulcers in small intestine; also ulceration of left vocal cord. |

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|---|---|---|---|---|---|---|---|---|---|---|
| 20 W.M. | " | M. | 9 | Shivering, vomiting, headache, cough | Admitted on 6th day; slight diarrhœa; marked bronchitis; delirious; rose spots appeared 8 days after admission; patient exhausted; was below skin; bronchitis became very severe; passed [illegible] | 14 days' fever; highest temp. 105° | 14 | " | Brandy | Death occurred mainly from pneumonia and bronchitis. P.M.—There were found numerous enteric ulcers in small intestine, a few in large; 11 patches of sclerosis in various parts of brain. It was ascertained that he had had "fits" for the last two years. A postman. In the room where he worked there was a constant smell from a public urinal. Developed physical signs of phthisis at both apices during the last month in hospital. |
| | | | | | | 19 days' fever; highest temp. 104° | 38 | " | Sponged, Liq. Strychniæ | One brother died last May of enteric fever; one brother and one sister ill at home with enteric fever; one brother No. 6 in hospital; if wanted are will submit them. The family moved from the house in which they had previously lived a few days ago. |

TABLE B—*continued.*

| No. and name. | Month admitted | Sex | Age. | Onset. | Character. | Fever. | Days in hosp. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| 24 F. C. | May | F. | 7 | Sudden headache, pains in limbs | Admitted on 5th day; bowels rather constipated; tongue dry, brown; slight bronchitis; systolic apex murmur developed while in hospital | 9 days' fever; highest temp. 104·8° | 36 | Recov. | — | From same house as Nos. 8, 25, 26, 27. Slight case. |
| 25 C. C. | ,, | M. | 5 | Sickness, loss of appetite, diarrhœa | Admitted on 11th day; slight abdominal tenderness; slight bronchitis; tongue furred | 11 days' fever; highest temp. 102·6°. Temp. intermittent from commencement | 15 | ,, | — | Brother of No. 24. |
| 26 J. C. | ,, | M. | 3 | Sickness and diarrhœa | Admitted on 2nd day; slight diarrhœa; abdomen somewhat distended; slight bronchitis; tongue furred | 4 days' fever; highest temp. 102° | 18 | ,, | — | Brother of No. 24. |
| 27 C. C. | ,, | F. | 5 | Sudden headache, vomiting, pain in limbs, diarrhœa, loss of appetite | Admitted on 5th day; slight diarrhœa; slight abdominal distention; tongue very furred | 8 days' fever; highest temp. 102·8° | 28 | ,, | — | Lives in same house as No. 24. |
| 28 V. E | June | M. | 7 | Sudden vomiting, headache | Admitted on 6th day; constipation; abdomen tumid; white furred tongue; slight bronchitis; systolic murmur all over præcordia; rose spots came out 10 days after admission | 20 days' fever; highest temp. 103° | 47 | ,, | Purgative enemata | One brother (No. 15) was in hospital in March with enteric fever. |

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|---|---|---|---|---|---|---|---|---|---|---|
| 29<br>D. A. | „ | F. | 12 | Vomiting, diarrhœa, headache, epistaxis | Admitted on 26th day; diarrhœa; abdomen distended; very dry, brown tongue; very drowsy; bronchitis; rose spots on admission | 26 days' fever; highest temp. 104·6° | 52 | „ | — | The attack in hospital was probably a relapse. She had never kept her bed while ill at home. |
| 30<br>A. S. | July | F. | 27 | Ailing for some time; temp. was taken, and found to be 105° 12 days before admission; delirious 10 days before admission; refusing food | Admitted on 15th day; constipation; abdomen retracted; systolic apex murmur; tongue dry and furred; pulse extremely feeble and frequent. She was almost collapsed on admission, and remained so for some days. She gradually got stronger, but then showed symptoms of acute mania, with delusions of wickedness. She continued actively maniacal until her discharge, the enteric symptoms quite subsiding | 8 days' fever; highest temp. 101° | 23 | „ | Purgative enemata, Pulv. Ipecac. Co. | A German governess. She was sent to Bethlem Hospital, where she passed from the condition of mania into that of melancholia. She was suicidal for some time. She gradually completely recovered her mental equilibrium. |
| 31<br>B. J. | Aug. | M. | 3 | Headache, sickness, constipation | Admitted on 2nd or 3rd day; no symptoms, except slight diarrhœa after administration of castor oil; an erythematous rash over the body, but no rose spots | 11 days' fever; highest temp. 100·4° | 24 | „ | — | — |
| 32<br>W. C. | „ | M. | 23 | Headache, loss of appetite, cough, and expectoration | Admitted on 21st day; constipation; tenderness in right iliac region; headache; pains in joints; tongue white, furred; slight bronchitis. He became rather prostrate, with herpes on lips | 6 days' fever; highest temp. 103·2° | 36 | „ | Purgative enemata | — |

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TABLE B—*continued.*

| No. and name. | Month admitted | Sex. | Age. | Onset. | Character. | Fever. | Days in hosp. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 S. C. | Sept. | M. | 3 | Sudden onset, with shivering, sickness, cough, constipation | Admitted on 8th day with bronchitis only; 4 days after admission numerous rose spots appeared; constipation; tongue furred, white; spleen slightly enlarged | 9 days' fever; highest temp. 103°. On 25th day after admission temp. rose suddenly to 104·6°, and remained raised for 4 days | 53 | Recov. | Purgative enemata | From same house as No. 10. The rise of temperature occurred after eating biscuits. |
| 34 C. H. | „ | F. | 23 | Sudden headache, pain in chest, loss of appetite, diarrhœa, cough | Admitted on 15th day; slight diarrhœa; abdomen tumid; tongue dry, raw in centre, furred at edges; slight bronchitis; soft systolic apex murmur; numerous sudamina; a few rose spots; became very tremulous, and sank into a semi-comatose condition some days before death | 8 days' fever; temp. ranging from 104° to 105° until day of death, when it rose to 107·6°; fell after sponging, but rose again to 109°, when she died | 8 | Death | Brandy, sponged | Bad smell in workroom, but no other people ill in the house. Temp. for a week previous to admission ranged from 99·8° to 104·8°. Death occurred from hyperpyrexia. P.M.—Only a few ulcers in small intestine, but very deep ones; heart much wasted. |
| 35 E. H. | „ | F. | 13 | Suddenly fainted, headache, became drowsy, bowels constipated, slight cough | Admitted on 14th day; constipation at first, then slight diarrhœa; delirious, drowsy, tremulous; much bronchitis; sordes; dry, brown tongue; abdomen tumid; numerous spots; very troublesome to feed at first; twice passed motions in bed. Symptoms during latter half of attack much slighter | 8 days'-fever; highest temp. 103·2° | 44 | Recov. | Brandy | Bad smell in house. Prolonged convalescence. Heart's action very weak for some time. |

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|---|---|---|---|---|---|---|---|---|---|---|
| 36 S. R. | Nov. | F. | 14 | Very indefinite headache, pains in stomach, constipation | Admitted in 3rd week with flushed face and furred tongue, sordes on teeth, and constipation; some impaired resonance at base of left lung; rose spots appeared on abdomen; 5 days after delirious. Case followed a mild course, with constipation all through | 11 days' fever; highest temp. 104° | 41 | „ | — | Was employed in dyeing artificial flowers, and it seemed at first as if it were a case of lead poisoning. |
| 37 F. L. | „ | M. | 10 | Malaise, headache; going to school until one week before admission | Admitted at end of 3rd week; constipation; abdomen slightly tumid; tongue furred; rose spots on abdomen and chest | 20 days' fever; temp. reaching normal 4 days after admission, but continuing to oscillate for 16 days more; highest temp. 104° | 55 | „ | — | Son of No. 39. Slight case. Temp. became normal as soon as solid food was taken. |
| 38 H. L. | „ | M. | 5 | Malaise, headache | Admitted on 8th day; constipation; slight humidity of abdomen; spleen slightly enlarged; apex systolic murmur; rose spots appeared 3 days after admission; 9 days after admission became collapsed for a short time | 19 days' fever; reached normal 18 days after admission, but oscillated for 8 days more, reaching 102·6° once; highest temp. 105·2° | 55 | „ | — | Son of No. 39. Slight case. |
| 39 J. L. | „ | F. | 32 | Malaise, slight diarrhœa | Admitted at end of 3rd week; diarrhœa; abdomen slightly distended; extremely tender; tongue dry, brown; respirations very shallow; general bronchitis; very emotional. Became rapidly collapsed | 2 days' fever; highest temp. 103·8° | 2 | Death | — | Death from perforation, probably produced by bringing her to the hospital. P.M.—Only 2 or 3 ulcers in small intestine, one of which had perforated; general acute peritonitis. Living in Peabody Buildings. |

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## Table C.—*Acute Rheumatism.*

In last year's report a summary was given of all the cases of acute rheumatism treated in the hospital during the years 1881-2-3-4-5-6-7, with special reference to the following points: age, sex, months, seasons of the year, duration of attack, heart complications, and inheritance. To this summary are now added the details of the cases treated during the year 1888, the total number of cases being 556.

*Ages.*

| | Under 5. | 5—10. | 10—20. | 20—30. | 30—40. | 40—50. | 50—60. | Over 60. |
|---|---|---|---|---|---|---|---|---|
| 1881 | 0 | 2 | 31 | 22 | 23 | 5 | 1 | 0 |
| 1882 | 1 | 3 | 29 | 16 | 12 | 5 | 1 | 0 |
| 1883 | 0 | 1 | 18 | 28 | 14 | 8 | 2 | 1 |
| 1884 | 0 | 16 | 33 | 29 | 14 | 5 | 3 | 0 |
| 1885 | 0 | 1 | 26 | 21 | 12 | 1 | 1 | 1 |
| 1886 | 0 | 0 | 17 | 13 | 4 | 2 | 0 | 0 |
| 1887 | 0 | 2 | 29 | 24 | 10 | 3 | 1 | 0 |
| 1888 | 1 | 5 | 18 | 29 | 9 | 3 | 0 | 0 |
| Total | 2 | 30 | 201 | 182 | 98 | 32 | 9 | 2 |

*Sex.*

| | Males. | Females. |
|---|---|---|
| 1881 | 43 | 41 |
| 1882 | 25 | 42 |
| 1883 | 39 | 33 |
| 1884 | 46 | 54 |
| 1885 | 31 | 32 |
| 1886 | 13 | 23 |
| 1887 | 34 | 35 |
| 1888 | 38 | 27 |
| Total | 269 | 287 |

*Numbers admitted in each month.*

| | | | |
|---|---|---|---|
| January | 56 | July | 30 |
| February | 52 | August | 46 |
| March | 48 | September | 54 |
| April | 41 | October | 60 |
| May | 37 | November | 37 |
| June | 40 | December | 55 |

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*Seasons.*

Cases admitted in each group of three months.

| | | | |
|---|---|---|---|
| January—March . . | 156 | July—September . . | 130 |
| April—June . . . | 118 | October—December . | 152 |

Cases admitted in two groups: six warmer and six colder months.

| | | | |
|---|---|---|---|
| April—September . . | 241 | October—March . | 315 |

Average stay in hospital—25·72 days.

*Inheritance.*

| | Rheumatism. | Gout. | Neurosis. | Phthisis. |
|---|---|---|---|---|
| 1881 . . . . | 26 ... | 7 ... | 3 ... | 11 |
| 1882 . . . . | 34 ... | 2 ... | 13 ... | 19 |
| 1883 . . . . | 32 ... | 6 ... | 9 ... | 9 |
| 1884 . . . . | 42 ... | 14 ... | 22 ... | 8 |
| 1885 . . . . | 17 ... | 7 ... | 22 ... | 18 |
| 1886 . . . . | 11 ... | 2 ... | 3 ... | 5 |
| 1887 . . . . | 28 ... | 0 ... | 8 ... | 14 |
| 1888 . . . . | 37 ... | 3 ... | 0 ... | 9 |
| Total . . . | 227 ... | 41 ... | 80 ... | 93 |

*Character.*

| Months. | No. of cases. | Average stay in days. | No. of cases with heart disease. | Character of heart disease. | | No. of cases admitted with old heart disease. |
|---|---|---|---|---|---|---|
| | | | | Pericarditis. | Endocarditis. | |
| January . . . | 56 | 31·60 | 31 | 9 | 29 | 6 |
| February . . | 52 | 29·26 | 33 | 18 | 23 | 9 |
| March . . . | 48 | 31·49 | 24 | 12 | 21 | 4 |
| April . . . | 41 | 35·04 | 23 | 6 | 21 | 10 |
| May . . . | 37 | 29·99 | 19 | 11 | 16 | 4 |
| June . . . | 40 | 26·66 | 20 | 7 | 16 | 7 |
| July . . . | 30 | 15·25 | 18 | 6 | 12 | 8 |
| August . . . | 46 | 20·77 | 22 | 10 | 14 | 7 |
| September . . | 54 | 26·10 | 24 | 5 | 16 | 8 |
| October . . . | 60 | 32·05 | 35 | 12 | 26 | 12 |
| November . . | 37 | 24·51 | 26 | 8 | 11 | 5 |
| December . . | 55 | 25·64 | 30 | 10 | 19 | 12 |

The whole number of cases with heart affection is 305; of these, 114 suffered from pericarditis, and 224 from endocarditis. The number includes 92 cases with old heart disease, as shown by cardiac bruits, and 66 who had both pericarditis and endocarditis. The number leaving hospital with persistent bruits is 231.

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 1 W.K. | M. | 8 | Jan. | 11th | 0 | 8 | — | 6 | 4 | 103·0° | Both knees, both ankles | Systolic murmur at apex | Present | Systolic murmur at apex | 25 | Recovery | Sodii salicyl. | — |
| 2 M. B. | F. | 33 | „ | 105th | 3 | 17 | 1 sister acute rheumatism | 1 | 17 | 100·0° | Left wrist | Systolic murmur at apex; apex not palpable | ? | Systolic murmur at apex | 18 | „ | „ | — |
| 3 C. F. | M. | 18 | „ | 14th | 1 | 16 | Father suffers from rheumatism, 1 brother has phthisis | 1 | 4 | 99·0° | Both shoulders, both elbows and ankles | Mitral systolic, and double aortic murmurs | Previous | Mitral, systolic, and double aortic murmurs | 8 | „ | Potass. citrat. | — |
| 4 J. S. | M. | 43 | „ | 3rd | 2 | 5 | — | 3 | 2 | 103·0° | Both knees | Mitral systolic murmur, apex in nipple line | „ | Mitral systolic murmur | 11 | „ | „ | A slight attack of lobar pneumonia. |
| 5 W. C. | M. | 8 | „ | 6th | — | — | Father and mother have both had acute rheumatism | 6 | 4 | 103·2° | Knees, ankles | — | — | Heart-sounds clear | 15 | „ | Sodii salicyl. | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 W. E. | M. | 18 | " | 4th | — | — | — | 6 | 4 | 101·8° | Right ankle | — | — | Heart-sounds clear | 14 | " | Hst. ferri c. Quass. Sodii salicyl. | — |
| 7 G. P. | M. | 21 | " | 14th | — | — | Mother has had acute rheumatism frequently, 1 sister acute rheumatism | 15 | 23 | 101·8° | Feet, ankles, knees, and shoulders | Mitral systolic murmur | Present | Mitral systolic murmur, no hypertrophy | 45 | " | Sodii salicyl. | — |
| 8 T. O. | M. | 30 | " | 16th | 1 | 28 | Father suffers from rheumatism and gout | 6 | 4 | 102·4° | Right knee, both ankles, hands | — | — | Heart-sounds clear | 9 | " | Potass. citrat. | Was exposed to wet and cold immediately before the attack. |
| 9 J. P. | M. | 24 | Feb. | 6th | 1 | 11 | — | 3 | 3 | 100·8° | Knees and ankles | Systolic murmur at apex | Present | Systolic murmur at apex | 7 | " | Sodii salicyl. | — |
| 10 E. S. | M. | 5 | " | 14th | — | — | — | 16 | 16 | 104·6° | Knees and elbows | Pericarditis | " | Heart-sounds clear | 16 | Death | — | Died from pneumonia. |
| 11 W. J. | M. | 24 | " | 10th | — | — | 1 sister acute rheumatism | 4 | 7 | 102·0° | Ankles, knees, wrists, and shoulders | — | — | " | 14 | Recovery | — | Was exposed to draughts just before attack. |
| 12 C. F. | M. | 18 | " | 5th | 2 | 16 | Father suffers from rheumatism, 1 brother has phthisis | 6 | 6 | 103·4° | Elbows and wrists | Mitral systolic and double aortic murmurs | Previous | Mitral systolic and double aortic murmurs | 24 | " | Sodii salicyl. | Was discharged from hospital only 3 weeks previously after acute rheumatism. Pleurisy on right side. |



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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 13 S. M. | F. | 35 | Feb. | 35th | 1 | 23 | 1 brother suffers from rheumatism | 5 | 6 | 100·0° | Knees, ankles, elbows, wrists | Presystolic and systolic mitral murmurs, apex in nipple line | Previous | Presystolic and systolic mitral murmurs | 21 | Relief | Hst. ætheris et ammon., brandy | The heart symptoms predominated. |
| 14 C. D. | M. | 28 | Mar. | 18th | 1 | 18 | 1 brother suffers from rheumatism | 30 | 20 | 100·4° | Knees, wrists, ankles, elbows | Mitral systolic murmur | Present | Mitral systolic murmur | 35 | Recovery | Hst. potass., iod. alkal. | — |
| 15 H. E. | M. | 36 | „ | 4th | "Several" | 32 | Father suffers from gout and rheumatism, 1 brother has had acute rheumatism | 35 | 40 | 103·0° | Hands, ankles, knees, shoulders, elbows, and neck | Mitral systolic murmur, pericarditis | „ | Heart-sounds clear | 65 | „ | Sodii salicyl. | Very profuse sweating. One relapse. |
| 16 W. B. | M. | 32 | „ | 14th | 1 | 32 | 1 sister suffers from rheumatism | 4 | 7 | 102·4° | Ankles, knees, wrists, shoulders | Pericarditis | „ | „ | 22 | „ | „ | Exposed to draughts recently. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 H. B. | M. | 35 | „ | 21st | — | — | 2 brothers suffer from rheumatism | 6 | 4 | 102·4° | Ankles knees, elbows | Systolic murmur at apex | „ | „ | 17 | „ | „ | — |
| 18 E. B. | F. | 22 | April | 14th | 2 | 17 | Mother has had acute rheumatism | 10 | 14 | 99·2° | Knees, ankles, hips, shoulders | Mitral systolic murmur, pericarditis | Previous | Mitral systolic murmur | 24 | „ | Potass. citrat. | — |
| 19 E. A. | F. | 28 | „ | 14th | 1 | 20 | 1 brother has had acute rheumatism | 8 | 6 | 101·6° | Left elbow, left ankle, left wrist, both knees | Systolic murmur at apex | Present | Heart-sounds clear | 18 | „ | Sodii salicyl. | — |
| 20 L. H. | F. | 17 | „ | 7th | 1 | 12 | Father suffers from rheumatism | 35 | 30 | 104·0° | Ankles, elbows, knees, wrists, shoulders | Large pericardial effusion on admission | „ | Double aortic and mitral regurgitant murmurs, with probably adherent pericard., apex 1 in. outside nipple | 148 | „ | Brandy | Was admitted with left pleuro-pneumonia, soon followed by left pleural effusion. This subsided very slowly, and did not finally clear up until 2½ mos. after admission. For some weeks after recovery from rheumatism she fainted whenever she attempted to sit up. |
| 21 S. H. | M. | 30 | „ | 4th | 2 | 28 | Father and mother have both had acute rheum., 1 brother suffers from rheum. | 7 | 3 | 101·0° | Hips, knees, ankles, shoulders, wrists, elbows | Mitral presystolic and systolic murmurs, apex ½ in. inside nipple | Previous | Mitral presystolic and systolic murmurs | 18 | „ | Sodii salicyl. | — |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 22 F. G. | F. | 29 | April | 14th | 1 | 26 | Father and mother both suffer from chronic rheumatism | 12 | 6 | 102·8° | Ankles knees, hands, elbows | Systolic murmur over pulmonary cartilage, occasional systolic at apex | Present | Apex murmur remains | 29 | Recovery | Sodii salicyl. | Very profuse sweating. One relapse. Temp. reaching 103°. |
| 23 J. B. | M. | 28 | „ | 8th | — | — | — | 14 | 26 | 102·4° | Right knee and ankle, left knee and ankle | Occasional systolic at all orifices | „ | Heart-sounds clear | 41 | „ | „ | Very profuse sweating. Slight relapse. Rather heavy beer drinker. |
| 24 L. M. | F. | 7 | „ | — | — | — | — | — | — | 102·0° | — | — | — | — | — | — | — | No notes obtainable. |
| 25 W. H. | M. | 24 | „ | 3rd | 1 | 16 | — | 3 | 4 | 101·2° | Knees, ankles, hips, elbows, wrists | Faint mitral systolic, functional murmur at right and left base, apex in nipple line | Previous | Heart-sounds clear | 19 | Recovery | Potass. citrat. | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 E. M. | F. | 20 | „ | 3rd | — | — | — | 4 | 2 | 101·0° | Right knee | Systolic murmur at apex probably functional | Present | Heart-sounds clear | 18 | „ | Sodii salicyl. | — |
| 27 M. A. B. | F. | 21 | „ | In hosp. | 2 | 17 | Father, 2 brothers, and 1 sister acute rheumatism, paternal uncle and aunt acute rheum., and the latter died from it | 12 | 16 | 102·6° | Both shoulders, knees, wrists, right elbow and ankle; all joints in relapse | Systolic murmur at apex, apex ½ in. inside nipple | Previous | Systolic murmur at apex, pulmonary second sound reduplicated | 102 | „ | „ | Was admitted for anæmia after acute rheumatism. Some 3 weeks after admission the attack of rheumatism came on. She had one relapse lasting 3 weeks. |
| 28 A. L. | M. | 18 | May | 5th | 1 | 13 | Father suffers from rheumatism and gout | 1 | 4 | 99·4° | Right knee, both ankles | Systolic murmur at apex, pulmonary second sound reduplicated, apex in nipple line | „ | Systolic murmur at apex | 13 | „ | „ | Severe tonsillitis. |
| 29 F. D. | F. | 20 | „ | 5th | 1 | 10 | — | 12 | 16 | 101·8° | Shoulders, elbows, knees, ankles | Systolic murmur at apex | Present | Heart-sounds clear | 26 | „ | Potass. citrat. | — |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 30 E. C. | F. | 28 | May | 10th | 3 | 17 | Father is subject to rheumatism, also 1 sister | 7 | 10 | 101·4° | Right knee, left hip | Mitral presystolic and systolic murmurs with presystolic thrill, apex in nipple line | Previous | Double mitral murmur | 24 | Recovery | Sodii salicyl., potass. citrat., blister on knee | — |
| 31 E. N. | F. | 45 | „ | 14th | 1 | 37 | 1 sister died of phthisis | 9 | 9 | 102·0° | Ankles knees, right wrist | Pericarditis, systolic murmur at apex | Present | Systolic murmur at apex | 39 | „ | Sodii salicyl. | Got wet through while washing. |
| 32 E. S. | F. | 30 | „ | 6th | — | — | 1 sister died in her 2nd attack of acute rheum. | 14 | 25 | 104·0° | Ankles, knees, hips, left shoulder | Pericarditis, systolic murmur at all orifices | „ | Heart-sounds clear | 43 | „ | „ | One relapse. |
| 33 J. W. | F. | 25 | „ | 7th | — | — | Mother has had acute rheumatism | 7 | 9 | 101·6° | Ankles, knees, hips, shoulders | Presystolic thrill and murmur at apex, apex in nipple line | Previous | Presystolic murmur at apex | 35 | „ | „ | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 W. D. | M. | 18 | „ | 4th | 1 | 15 | Mother suffers from rheumatism, 1 brother died from acute rheumatism | 5 | 8 | 102·2° | Both knees, wrists, shoulders | Systolic murmur at all orifices | Present | Systolic murmur at apex | 16 | „ | Potass. citrat. | — |
| 35 W. G. B. | M. | 19 | „ | 3rd | 1 | 18 | — | 5 | 8 | 101·0° | Left knee, right knee, wrists, shoulders | Systolic murmur at all orifices, apex in nipple line | Previous | Systolic murmur at all orifices | 22 | „ | Sodii salicyl. | Sore-throat 3 weeks before admission. Stands a great deal in the wet. |
| 36 E. M. | F. | 16 | „ | 14th | — | — | Mother died of phthisis | 3 | 6 | 102·6° | Left ankle, knee, hip, elbow, wrist, right wrist | Systolic murmur heard all over præcordia, apex ½ in. inside nipple | Present | Systolic murmur at apex | 33 | „ | „ | — |
| 37 A. L. | M. | 18 | June | 6th | 2 | 13 | Father suffers from rheumatism and gout | 3 | 6 | 100·0° | Left ankle, knee, both shoulders and wrist | Mitral systolic murmur, apex in nipple line | Previous | Mitral systolic murmur | 29 | „ | „ | Was only discharged 14 days previously. |
| 38 W. R. J. | M. | 26 | „ | 4th | 2 | 16 | Paternal uncle suffers from gout and heart disease, 1 sister died of phthisis | 2 | 4 | 101·6° | Right hip and foot, both knees, right elbow | — | — | Heart-sounds clear | 13 | „ | „ | He got very hot the day previous to admission playing tennis, and lay down on the grass. |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history | Days of fever in hospital | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 39 J. B. | M. | 28 | June | 12th | 1 | 28 | — | 2 | 3 | 100·8° | Right ankle, knee, shoulder, elbow, wrist | — | — | Heart-sounds clear | 17 | Recovery | Sodii salicyl. | Was discharged after acute rheumatism 14 days previously. |
| 40 E. D. | F. | 22 | „ | 9th | 2 | 20 | Father had acute rheumatism 7 years ago, and has heart disease now | 1 | 4 | 101·6° | Both ankles, knees, elbows, wrists | Systolic murmur over pulmonary cartilage | Present | „ | 15 | „ | „ | Commenced with a severe sore throat, which had not recovered on admission. |
| 41 E. T. | F. | 12 | „ | 6th | — | — | Mother and father both suffer from rheumatism | 4 | 15 | 103·2° | Hips, knees, ankles, shoulders, elbows, wrists | Pericarditis, slight systolic murmur at apex | „ | „ | 31 | „ | „ | Slight choreic movements. Albuminuria at commencement. Sore-throat 14 days before admission. |
| 42 R. D. | M. | 37 | „ | 1st | — | — | — | 2 | 5 | 101·8° | Both knees, right elbow, left wrist | — | — | — | 11 | „ | „ | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 H. P. | M. | 28 | „ | 30th | — | — | Mother suffers from chronic rheumatism | 2 | 6 | 102·0° | Both hips and knees, right ankle | Slight pericarditis | Present | Heart-sounds clear | 13 | „ | „ | — |
| 44 H. B. | F. | 9 | „ | 7th | — | — | — | 1 | 0 | 103·0° | None | Functional murmur at all orifices | „ | „ | 6 | „ | „ | Was transferred from surgical wards when the acute rheumatism was practically over. |
| 45 O. J. | M. | 24 | July | 6th | 3 | 12 | Father suffers from rheumatism and gout | 3 | 4 | 101·2° | Right shoulder, elbow, and wrist, hips, knees, ankles | Soft systolic murmur at apex, second sound reduplicated at right base | „ | Systolic apex murmur | 13 | „ | „ | Anæmic. |
| 46 L. F. | M. | 17 | „ | 5th | 1 | 12 | Father died of pleurisy, maternal grandfather suffered from rheumatism | 7 | 6 | 103·0° | Ankles and knees | Presystolic and systolic mitral murmurs, heart's apex in nipple line | Previous and present | Systolic mitral only audible | 25 | „ | Pulv. ipecac. co. | Chorea during previous attack of acute rheumatism. Present attack commenced with tonsillitis, to which he is subject. |
| 47 H. B. | M. | 19 | Aug. | 7th | — | — | — | 22 | 11 | 102·2° | Ankles, knees, wrists, left shoulder | Systolic murmur all over præcordia, apex in nipple line, pericarditis | Present? | Soft mitral systolic murmur | 42 | „ | Sodii salicyl. | General psoriasis, which came on a week before the rheumatism. Has had several previous slight attacks of psoriasis. One relapse lasting 4 days. |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 48 H. S. | M. | 16 | Sept. | 5th | Many | 8 | — | 3 | 17 | 102·8° | Wrists, shoulders, hands | Mitral systolic and (?) aortic systolic murmurs, apex 1 in. outside nipple | Previous | Mitral and aortic systolic murmurs | 45 | Recovery | Sodii salicyl. | — |
| 49 J. B. | F. | 36 | „ | 14th | — | — | Mother suffers from rheumatism | 28 | 72 | 102·0° | Elbows, right knee, left shoulder. The pain in right knee lasting for some weks was due to the formation of adhesions | — | — | Heart-sounds clear | 73 | „ | Potass. bromid., chloral hydrate | This patient came in with symptoms of acute mania, actively delirious with delusions as to places and persons. She gradually got into a typhoid condition, passing her motions and urine in bed. She passed out of this state, but her delusions continued until within a week of her discharge, when she completely recovered mentally. |
| 50 A. T. | F. | 28 | „ | 70th | 2 | 22 | — | 39 | 15 | 102·0° | Ankles, knees. Pain and swelling very | Mitral presystolic and systolic mur- | Previous | — | 40 | Death | Sodii salicyl. | She was extremely weak and feeble all the time she was in hospital, with constant severe headache. Facial ery- |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | slight, but constantly recurring | murs, with presystolic thrill apex ½ in. inside nipple | | | | | | erysipelas came on 4 days before death. P.M.—There was found mitral narrowing and incompetence, with a patch of ulcerative endocarditis in right auricle, and a deposit of lymph upon it. |
| 51 A. B. | M. | 21 | „ | 4th | — | — | 1 brother has had acute rheumatism, 2 sisters and 1 brother have died of phthisis | 2 | 3 | 101·4° | Knees and elbows | — | — | Heart-sounds clear | 7 | Recovery | „ | — |
| 52 K. B. | F. | 6 | „ | 3rd | — | — | 2 maternal aunts and 1 uncle died of phthisis, phthisis is also on father's side of family | 2 | 3 | 101·2° | Left knee, left ankle | — | Present | Occasional systolic murmur at apex | 25 | „ | „ | The attack began with tonsillitis. There was a trace of albumen in urine, which soon disappeared. Double pleural effusion soon after admission. |
| 53 E. C. | F. | 24 | „ | 4th | — | — | Father has had acute rheumatism twice | 2 | 3 | 101·8° | Left knee, both shoulders | — | — | Heart-sounds clear | 6 | „ | „ | Very profuse sweating. |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 54 L. M. C. | F. | 11 | Sept. | 5th | — | — | Mother suffers from rheumatism | 2 | 1 | 100·4° | Both ankles | — | — | Heart-sounds clear | 16 | Recovery | Tinct. ferri perchlor. | Purpura on legs and trunk on admission. Very anæmic. Has not eaten any meat this year. |
| 55 E. B | M. | 21 | Oct. | 1st | — | — | Mother has had 7 attacks of acute rheum., a brother 1 attack | 10 | 10 | 102·4° | Ankles, knees, shoulders | — | — | „ | 30 | „ | Sodii salicyl. | One relapse. |
| 56 F. T. | M. | 5 | „ | 3rd | — | — | Father and 1 sister have both had acute rheum., paternal uncle and aunt suffer from phthisis | 3 | 2 | 100·4° | Right knee and wrist | Systolic apex murmur, heart's action at one time very slow (56) and irregular | Present | „ | 42 | „ | „ | — |
| 57 M. A. B. | F. | 37 | „ | 3rd | 7 | 14 | Father suffers from gout, 2 sons | 11 | 14 | 101·4° | Right wrist, both shoulders | Systolic mitral murmur, pericarditis | Present and previous | Systolic mitral murmur | 25 | „ | Hst. ætheris et ammon. | Shortness of breath always. Much bronchitis on admission. Mother of No. 55. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | have had acute rheumatism | | | | | | | | | | | |
| 58 C. P. | F. | 49 | „ | 14th | 1 | 38 | Father suffers from rheumatism, 1 daughter has had acute rheum. twice | 28 | 24 | 103·2° | Knees, ankles, hands | Presystolic and systolic mitral murmurs, presystolic thrill, pericarditis | „ | Presystolic and systolic mitral murmurs | 31 | „ | Brandy | Albumen in urine. Dry, brown tongue, and great prostration for some days. |
| 59 E. B. | M. | 21 | Nov. | 5th | 1 | 21 | Mother has had 7 attacks of acute rheumatism, and 1 brother 1 attack | 3 | 7 | 102·0° | Left elbow, both knees, left hip | — | — | Heart-sounds clear | 16 | „ | Sodii salicyl. | Was discharged from hospital a fortnight previous, after acute rheumatism. |
| 60 R. J. | M. | 30 | „ | 6th | — | — | 1 brother died of phthisis, 1 brother died of brain fever | 11 | 15 | 101·4° | Right shoulder, knees before admission | — | — | „ | 21 | „ | „ | Ischio-rectal abscess. |
| 61 C. P. | M. | 19 | „ | 7th | 4 | 12 | — | 3 | 7 | 101·2° | Knees, ankles, left wrist | Double aortic and mitral systolic murmurs, apex in nipple line | Previous | Double aortic and mitral systolic murmurs | 13 | „ | „ | — |

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TABLE C—*continued.*

| No. and name. | Sex. | Age. | Month admitted. | Day of illness admitted. | Previous attacks. | Age when first attacked. | Family history. | Days of fever in hospital. | Days of pain in hospital. | Highest temp. | Joints, &c., affected. | Heart. | | | No. of days in hospital. | Result. | Treatment. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Affection. | In which attack developed. | State on discharge. | | | | |
| 62 T. H. | M. | 19 | Nov. | 8th | — | — | — | 3 | 5 | 104·0° | Knees, ankles, right wrist, and shoulder | Faint systolic murmur audible at all orifices | Present | Heart-sounds clear | 22 | Recovery | Sodii salicyl. | — |
| 63 C. C. | F. | 17 | Dec. | 6th | 1 | 16 | 1 brother suffers from rheumatism, father has phthisis (?) | 2 | 3 | 101·0° | Left knee, right knee, both ankles | Faint systolic murmur at apex | „ | „ | 27 | „ | „ | Discharged in January, 1889. |
| 64 M. D. | F. | 22 | „ | 15th | 1 | 19 | 1 brother has had acute rheumatism, mother's family suffers from phthisis | 3 | 8 | 102·2° | Ankles | Systolic mitral murmur | Previous ? | Systolic mitral murmur | 22 | „ | „ | Discharged in January, 1889. |
| 65 T. H. | M. | 24 | „ | 3rd | 1 | 17 | — | 6 | 4 | 101·0° | Ankles, right shoulder | — | Present | Occasional faint systolic murmur at apex | 20 | „ | Sodii salicyl., pulv. ipecac. co. | Discharged in January, 1889. |

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## Table D.—*Chorea.*

During the years 1881-2-3-4-5-6-7-8 165 cases of chorea have been treated in the hospital. A summary of these cases is prefixed to the analysis of the cases of the year 1888.

*Inheritance.*

| | |
|---|---|
| Rheumatism | 57 |
| Neurosis | 53 |
| Phthisis | 15 |
| Gout | 4 |

*Sex.*

| | Males. | Females. |
|---|---|---|
| 1881 | 6 | 14 |
| 1882 | 4 | 18 |
| 1883 | 3 | 14 |
| 1884 | 11 | 17 |
| 1885 | 7 | 12 |
| 1886 | 5 | 11 |
| 1887 | 12 | 12 |
| 1888 | 6 | 13 |
| | 54 | 111 |

*Ages.*

| | Under 5. | 5—10. | 10—20. | 20—30. | 30—40. | 40—50. | 50—60. |
|---|---|---|---|---|---|---|---|
| 1881 | 0 | 4 | 17 | 1 | 0 | 0 | 0 |
| 1882 | 0 | 4 | 13 | 2 | 1 | 0 | 0 |
| 1883 | 1 | 4 | 10 | 2 | 0 | 0 | 0 |
| 1884 | 0 | 8 | 17 | 2 | 0 | 0 | 1 |
| 1885 | 0 | 3 | 14 | 1 | 0 | 1 | 0 |
| 1886 | 0 | 6 | 8 | 2 | 0 | 0 | 0 |
| 1887 | 2 | 5 | 17 | 0 | 0 | 0 | 0 |
| 1888 | 0 | 5 | 14 | 0 | 0 | 0 | 0 |
| | 3 | 39 | 110 | 10 | 1 | 1 | 1 |

*Rheumatism.*—There was a history of acute rheumatism in 48 cases. The relation of the acute rheumatism to the chorea was as follows:—In 14 cases the rheumatism was suggested as the cause; in 12 cases the attack of rheumatism has developed during the course of the chorea; in the remaining 21 cases there was a distinct interval of good health between the rheumatism and the chorea, viz. 6 years, 5 years (2), 4 years, 3 years (2), 2 years, 1 year (3), 7 months, 6 months

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(2), 5 months, 4 months, 3 months (2), 2 months (2), 6 weeks, 1 month (2).

*Causes.*—In 103 cases of the whole the causes assigned by the friends were sorrow, fright, or overwork at school.

*Heart.*—In 24 cases a mitral murmur, constant in force and rhythm, was audible; of these 24 cases 15 had suffered from acute rheumatism previously. In 73 cases a murmur was heard over the apex occasionally only, the murmur varying in time and intensity, and having quite disappeared at the discharge of the patient.

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TABLE D—*continued.*

| No. and name. | Family history. | Previous illness, with special reference to rheumatism. | Previous chorea. | Sex. | Age. | Heart condition. | Part of body affected. | Cause. | Result. | Days in hosp. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 A. D. | Mother has had acute rheumatism, 3 brothers died from fits | — | 0 | F. | 6 | Action irregular, occasional faint systolic murmur at apex | General, more marked on left side | — | Relief | 13 | Fits from 3 weeks old, but less frequently of late. |
| 2 W. C. | — | Measles and whooping-cough | 1 | M. | 9 | Action irregular, occasional systolic murmur at apex | General, more marked on left side | Overstudy; went back to school a fortnight after his discharge from hospital after chorea in 1887 | „ | 48 | Liquor arsenicalis up to 8 minims three times a day. |
| 3 F. W. | — | Measles and whooping-cough; pains in joints before first attack of chorea | 1 | M. | 12 | Occasional mitral systolic murmur, reduplication of pulmonary second sound | Left leg, both arms, and face | — | „ | 39 | — |
| 4 L. R. | — | — | 1 | F. | 12 | — | Right hand, left leg, and face | — | Recovery | 20 | Twitching came on when 14 days convalescent from rheumatic pains in joints, for which she had been in bed a fortnight. |

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TABLE D—*continued.*

| No. and name. | Family history. | Previous illness, with special reference to rheumatism. | Previous chorea. | Sex. | Age. | Heart condition. | Part of body affected | Cause. | Result. | Days in hosp. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 A. F. | 8 out of 10 brothers and sisters have died, mostly from chest affections | Enteric fever in 1884; acute rheumatism 6 months previously, lasting 1 month | 1 | F. | 17 | Action irregular, systolic murmur at apex | Right arm and face | Fright from a cat jumping out of a dark place on her | Relief | 10 | Married 4 months ago. Very emotional. |
| 6 A. G. | Father died of rheumatic gout, 1 sister deaf and dumb | Measles, some pains in joints recently | 0 | F. | 15 | — | Right arm and hand, both legs and face | — | Recovery | 15 | Admitted at the end of the attack, which came on gradually 3 months previously. |
| 7 F. C. | 1 brother suffers from rheumatism | Scarlet fever twice; 2 months ago had pains in limbs and sore-throat | 0 | F. | 8 | Action irregular, systolic murmur at base of heart, afterwards systolic at apex, with apex in nipple line, murmur disappeared before discharge, but hypertrophy remained | General, face and tongue especially | — | Relief | 47 | Movements came on gradually after pains in joints. A dull child in 1st standard. |
| 8 F. M. | 1 sister has had chorea, | Acute rheumatism | 0 | M. | 11½ | Loud mitral | Right arm, both legs, | — | Recovery | 9 | Movements came on gradually 4 days before admission. |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | father and mother have both had acute rheumatism | 2 years ago, and rheumatic pains, severe at first, for the last 6 months | | | | systolic murmur present when discharged | face, and tongue | | | | |
| 9 R. B. | Father had an attack of "rheumatism" lately, 1 brother has had acute rheumatism | 2 attacks of acute rheumatism 5 years and 5 months ago, scarlet fever | 4 | F. | 17 | Presystolic and systolic mitral murmurs, slight hypertrophy | Right arm and leg, face and tongue | Gradual onset | „ | 17 | In previous attacks of chorea, the right side alone was always affected. They occurred at 8, 13, 15, and 17 years of age, the last only a few months previously. |
| 10 S. J. H. | 2 maternal uncles suffer from rheumatism | Has had pain and swelling of joints, accompanied by sweating for last 2 years off and on | 0 | F. | 16 | First sound reduplicated at apex, second sound accentuated at base | Left arm and leg, face and tongue | Frightened by a bullock running down the passage in which she lived 2 months previously | „ | 14 | Movements came on about a fortnight after the fright. Patient is rather emotional. |
| 11 H. M. | Father and paternal grandfather suffer from rheumatism | Acute rheumatism in Aug., 1887, and Feb., 1888. Had a fit æt. 2 years, face drawn to left for 6 months afterwards | 0 | M. | 9 | Rough systolic murmur heard all over præcordia, loudest at apex, and conducted to back; apex ½ in. inside nipple, murmur present when discharged | General, face and tongue especially | — | Relief | 15 | Last attack of rheumatism 3 months before admission; pains in joints ever since. |

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TABLE D—*continued.*

| No. and name. | Family history. | Previous illness, with special reference to rheumatism. | Previous chorea. | Sex. | Age. | Heart condition. | Part of body affected. | Cause. | Result. | Days in hosp. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 G. F. E. | — | Pains in ankles 6 months previously, followed by loss of power in legs, falling when attempting to stand | 0 | M. | 11 | — | Left arm and leg, body, face, and tongue | In 5th standard, passed an examination, and was put up a standard; just before illness was anxious about the result of the examination | Relief | 15 | An intelligent, sharp boy. |
| 13 R. R. | — | Growing pains lately, measles and whooping-cough | 0 | F. | 12 | Action rather irregular, occasional systolic murmur at lower end of sternum | General, legs least | Was frightened by a boy catching hold of her leg in the dark; movements came on next morning | „ | 20 | Attack has lasted 2½ years, gradually getting worse; losing flesh lately. Improved at once in hospital. |
| 14 M. P. | Mother has had acute rheumatism | Scarlet fever | 0 | F. | 5½ | — | General, arms most affected | Was frightened by a woman running after her | „ | 16 | Movements have lasted 18 weeks; sometimes better, sometimes worse. |
| 15 E. A. G. | Father died of phthisis at 35, "very eccentric," maternal aunt has had puerperal mania | Some "rheumatic" pains during last month | 0 | F. | 10 | Occasional faint systolic murmur at apex | General, legs most affected | Much upset by the loss of her father 1 year previously | „ | 25 | Movements for last 12 months; worse for the last month. |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 16<br>C. H. | 1 of 8 children, 4 dead | "Growing pains" 18 months previously, measles and whooping-cough | 0 | F. | 15 | Action irregular, slight re-duplication of basic 2nd sound | Right arm, and neck muscles only | Frightened by a man who said he was going to take her to his house | „ | 43 | Movements for the last 5 years. Very dull child. Slight improvement after massage. |
| 17<br>W. C. | Father has rheumatic pains, 1 sister has had acute rheumatism | Rheumatic pains at commencement of chorea | 0 | M. | 10 | Action irregular, faint mitral systolic still occasionally heard at time of discharge | Right arm, hand, and leg; face, tongue, and trunk | — | Recovery | 63 | Speech much affected. Treated with massage. Slight attack of acute rheumatism 5 weeks after admission. |
| 18<br>E. L. | Mother has had acute rheumatism | Measles twice | 2 | F. | 10 | Action irregular, occasional systolic apex murmur, 2nd basic sound re-duplicated | General, legs least | Gradual onset | Relief | 42 | Previous attacks lasted 13 and 8 weeks each. The first came on after being frightened by Guy Fawkes. Developed diphtheria while in hospital. No change in movements during the attack. |
| 19<br>K. S. | — | — | 0 | F. | 12 | Action irregular, occasional systolic murmur at apex | Right arm and leg, left middle toe, face very slightly | Fright (? nature) | Recovery | 58 | Movements have lasted 1 year. Emotional. Recovered completely. |



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## TABLE E.—*List of Deaths in the Medical Wards.*

| | Males. | | Females. |
|---|---|---|---|
| **GENERAL DISEASES:** | | | |
| Scarlet fever | 2 | ... | 1 |
| Enteric fever | 2 | ... | 2 |
| Diphtheria | 6 | ... | 8 |
| Erysipelas | 1 | ... | 0 |
| Pyæmia | 1 | ... | 0 |
| Congenital syphilis | 2 | ... | 1 |
| Acute rheumatism | 1 | ... | 1 |
| Tuberculosis | 7 | ... | 6 |
| Diabetes | 2 | ... | 1 |
| **NERVOUS SYSTEM:** | | | |
| Cerebral hæmorrhage | 3 | ... | 3 |
| Tumour | 1 | ... | 0 |
| Meningitis (simple: of brain) | 1 | ... | 3 |
| Hydrocephalus | 0 | ... | 2 |
| Cerebellar abscess | 0 | ... | 1 |
| Spinal meningitis | 1 | ... | 0 |
| Delirium tremens | 1 | ... | 0 |
| **CIRCULATORY SYSTEM:** | | | |
| Ulcerative endocarditis | 2 | ... | 1 |
| Mitral disease | 2 | ... | 4 |
| Aortic disease | 2 | ... | 0 |
| Thoracic aneurysm | 2 | ... | 0 |
| **RESPIRATORY SYSTEM:** | | | |
| Acute bronchitis | 1 | ... | 0 |
| Chronic bronchitis | 5 | ... | 3 |
| Lobar pneumonia | 6 | ... | 2 |
| Lobular pneumonia | 5 | ... | 4 |
| Pleuritic effusion | 1 | ... | 0 |
| Empyema | 1 | ... | 1 |
| Phthisis | 12 | ... | 5 |
| Mediastinal tumour | 1 | ... | 0 |
| Pneumothorax | 1 | ... | 0 |
| Malignant disease of larynx | 1 | ... | 0 |
| **DIGESTIVE SYSTEM:** | | | |
| Ulcer of stomach | 0 | ... | 1 |
| Carcinoma of stomach | 1 | ... | 0 |
| Malignant disease of colon | 0 | ... | 1 |
| Enteriti | 1 | ... | 1 |

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| | Males. | | Females. |
|---|---|---|---|
| **Digestive System—*continued.*** | | | |
| Malignant disease of pancreas | 0 | ... | 1 |
| Cirrhosis of liver | 0 | ... | 2 |
| Malignant disease of liver | 1 | ... | 2 |
| Jaundice | 0 | ... | 1 |
| Acute peritonitis | 2 | ... | 0 |
| Ascites | 0 | ... | 1 |
| Addison's disease | 0 | ... | 1 |
| Marasmus | 1 | ... | 1 |
| **Urinary System:** | | | |
| Large white kidney | 1 | ... | 0 |
| Contracting granular kidney | 4 | ... | 1 |
| Cystic kidney | 1 | ... | 0 |
| **Generative System:** | | | |
| Carcinoma of ovary | 0 | ... | 1 |
| Pelvic cellulitis | 0 | ... | 1 |
| Total | 85 | ... | 64 |

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# SURGICAL REGISTRAR'S REPORT FOR THE YEAR 1888.

By ALFRED E. TAYLOR.

The total number of cases under treatment in the surgical wards during the past year was 1220, viz.:

| | Males. | Females. | Total. |
|---|---|---|---|
| Remaining in hospital December 31st, 1887 | 44 | 26 | 70 |
| Admitted during the year 1888 | | | 1150 |
| | | | 1220 |
| **Of these there were:** | | | |
| Discharged, cured or relieved | 630 | 377 | 1007 |
| „ unrelieved | 59 | 32 | 91 |
| Transferred to the medical wards | 6 | 5 | 11 |
| Died | 30 | 13 | 43 |
| In hospital December 31st, 1888 | 39 | 29 | 68 |
| | | | 1220 |

The mortality during the year was 3·52 per cent.

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TABLE I.—*Showing the total number of Cases of each Disease or Injury which were Discharged or Died during the year* 1888.

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| Scarlatina | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Erysipelas: | | | | | | | | | |
| i. Admitted: | | | | | | | | | |
| *a.* Cutaneous | 5 | 5 | ... | ... | ... | ... | ... | ... | ... |
| ii. Arising in hospital: | | | | | | | | | |
| *a.* Cutaneous | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Septicæmia | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Pyæmia | 4 | ... | ... | ... | ... | 3 | 1 | ... | ... |
| Rickets | 7 | 2 | 2 | 2 | 1 | ... | ... | ... | ... |
| RHEUMATISM: | | | | | | | | | |
| *a.* Subacute | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| SYPHILIS: | | | | | | | | | |
| Squamæ | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Ulcers | 8 | 3 | 3 | ... | ... | ... | 1 | ... | 1 |
| Condylomata | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Stricture of rectum | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Gummata | 11 | 6 | 2 | 1 | ... | ... | ... | 1 | 1 |
| TUMOURS: | | | | | | | | | |
| Scirrhus: | | | | | | | | | |
| i. *Primary:* | | | | | | | | | |
| Breast | 6 | ... | 5 | ... | ... | ... | ... | ... | 1 |
| Pylorus | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| ii. *Secondary:* | | | | | | | | | |
| Breast | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Epithelioma: | | | | | | | | | |
| Lip | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Tongue | 6 | 3 | 1 | 1 | ... | ... | ... | 1 | ... |
| Palate | 4 | ... | ... | 3 | ... | 1 | ... | ... | ... |
| Pharynx | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Œsophagus | 4 | 2 | ... | ... | ... | 1 | 1 | ... | ... |
| Rectum | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Submental glands (recurrent) | 2 | 1 | ... | ... | ... | ... | 1 | ... | ... |
| Neck | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Leg | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Pinna | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| Sarcoma: | | | | | | | | | |
| Breast | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Back | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Lower jaw | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Neck | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Kidney | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Brain | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Ovary | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Myeloid of humerus | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Epulis | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| TUMOURS—*continued.* | | | | | | | | | |
| Myxoma | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Nævus | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Lipoma: | | | | | | | | | |
| Back | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Abdominal wall | 2 | 1 | ... | ... | 1 | ... | ... | ... | ... |
| Thigh | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Finger | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Fibromyoma: | | | | | | | | | |
| Uterus | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Adeno-fibroma: | | | | | | | | | |
| Breast | 3 | ... | 2 | ... | ... | ... | ... | ... | 1 |
| Papilloma: | | | | | | | | | |
| Roof of mouth | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Vulva | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Penis | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Cysts: | | | | | | | | | |
| i. *Sebaceous:* | | | | | | | | | |
| Scalp | 3 | 1 | 2 | ... | ... | ... | ... | ... | ... |
| Forehead | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Nose | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| ii. *Serous:* | | | | | | | | | |
| Breast | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Neck | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Labial | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Bursal | 11 | 5 | 5 | 1 | ... | ... | ... | ... | ... |
| Dentigerous | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| MALFORMATIONS: | | | | | | | | | |
| Harelip | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Cleft palate | 4 | 1 | 3 | ... | ... | ... | ... | ... | ... |
| Spina bifida | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Genu valgum | 7 | 3 | 4 | ... | ... | ... | ... | ... | ... |
| Talipes varus | 5 | 2 | 1 | ... | 1 | ... | ... | ... | 1 |
| „ valgus | 2 | ... | 1 | ... | ... | ... | ... | ... | 1 |
| „ equino-varus | 4 | 3 | 1 | ... | ... | ... | ... | ... | ... |
| „ equinus | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| „ planus | 8 | 5 | 1 | 1 | ... | ... | ... | 1 | ... |
| Hammer-toe | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| DISEASES OF THE NERVOUS SYSTEM: | | | | | | | | | |
| Laceration of brain | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Apoplexy | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Epilepsy | 3 | 2 | ... | ... | ... | 1 | ... | ... | ... |
| Hysteria | 4 | ... | 3 | ... | ... | ... | ... | ... | 1 |
| Infantile paralysis | 2 | 1 | ... | ... | ... | ... | ... | ... | 1 |
| Sciatica | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Multiple sclerosis | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Paralysis of ulnar nerve | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| „ of deltoid | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| **DISEASES OF THE EAR:** | | | | | | | | | |
| Mastoid abscess | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Purulent otitis media | 5 | 2 | 2 | ... | ... | 1 | ... | ... | ... |
| Epithelioma of pinna (recurrent) | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| **DISEASES OF THE EYE:** | | | | | | | | | |
| Trichiasis | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Conjunctivitis | 7 | 2 | 5 | ... | ... | ... | ... | ... | ... |
| Keratitis | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Iritis | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Kerato-iritis | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Corneal ulcer | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Cataract | 13 | 6 | 6 | ... | ... | ... | ... | ... | 1 |
| Pannus—Trachoma | 4 | 2 | 2 | ... | ... | ... | ... | ... | ... |
| Glaucoma | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Dislocation of lens | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Shrivelled globe | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Optic neuritis | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Choroiditis disseminata | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Albuminuric retinitis | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| **DISEASES OF APPENDAGES OF EYE AND ORBIT:** | | | | | | | | | |
| Strabismus | 5 | 2 | 2 | 1 | ... | ... | ... | ... | ... |
| Dacryocystitis | 2 | ... | ... | 1 | ... | ... | ... | ... | 1 |
| **DISEASES OF THE NOSE:** | | | | | | | | | |
| Ozæna | 5 | 1 | 4 | ... | ... | ... | ... | ... | ... |
| Deviation of septum | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Adenoid vegetations | 6 | 4 | 1 | 1 | ... | ... | ... | ... | ... |
| **DISEASES OF THE CIRCULATORY SYSTEM:** | | | | | | | | | |
| Thrombosis and phlebitis | 11 | 4 | 5 | ... | 1 | 1 | ... | ... | ... |
| Varicose veins | 4 | 1 | 3 | ... | ... | ... | ... | ... | ... |
| Hæmatoma | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| White leg | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Epistaxis | 1 | ... | .. | ... | ... | 1 | ... | ... | ... |
| Leucocythemia | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| **DISEASES OF THE RESPIRATORY SYSTEM:** | | | | | | | | | |
| Phthisis | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Bronchitis | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Pneumonia | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Empyema | 4 | 4 | ... | ... | ... | ... | ... | ... | ... |
| Foreign body in larynx | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF THE ABSORBENT SYSTEM: | | | | | | | | | |
| *Glands:* | | | | | | | | | |
| i. Inflammation | 18 | 9 | 7 | 2 | ... | ... | ... | ... | ... |
| ii. Suppuration | 47 | 29 | 17 | ... | ... | ... | ... | 1 | ... |
| Lymphangitis | 8 | 6 | 2 | ... | ... | ... | ... | ... | ... |
| DISEASES OF THE DIGESTIVE SYSTEM: | | | | | | | | | |
| Stomatitis | 3 | 1 | 2 | ... | ... | ... | ... | ... | ... |
| Dentigerous cyst | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| *Tongue:* | | | | | | | | | |
| Glossitis | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Epithelioma | 6 | 3 | 1 | 1 | ... | ... | ... | 1 | ... |
| Chronic ulcer | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Tonsillitis | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| *Œsophagus:* | | | | | | | | | |
| Stricture | 3 | 2 | ... | ... | ... | ... | 1 | ... | ... |
| *Stomach:* | | | | | | | | | |
| Scirrhus of pylorus | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| *Intestines:* | | | | | | | | | |
| Peritonitis | 3 | 3 | ... | ... | ... | ... | ... | ... | ... |
| Malignant disease | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| Hernia: | | | | | | | | | |
| *a.* Reducible | 11 | 8 | 3 | ... | ... | ... | ... | ... | ... |
| *b.* Irreducible | 5 | ... | 4 | ... | 1 | ... | ... | ... | ... |
| *c.* Incarcerated | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| *d.* Strangulated: | | | | | | | | | |
| i. Inguinal | 8 | 5 | 1 | ... | ... | 2 | ... | ... | ... |
| ii. Femoral | 4 | ... | 3 | ... | ... | ... | 1 | ... | ... |
| iii. Umbilical | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| iv. Diaphragmatic | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| *Rectum and Anus:* | | | | | | | | | |
| Carcinoma | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Stricture (syphilitic) | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Fistula | 19 | 15 | 2 | 2 | ... | ... | ... | ... | ... |
| Hæmorrhoids | 25 | 11 | 11 | ... | 1 | ... | ... | 1 | 1 |
| Fissure | 6 | ... | 2 | 2 | 1 | ... | ... | ... | 1 |
| Prolapsus | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Anal ulcer | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Polypus | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| DISEASES OF THE URINARY ORGANS: | | | | | | | | | |
| *Kidney:* | | | | | | | | | |
| Calculus | 8 | 2 | 2 | ... | 2 | ... | 1 | ... | 1 |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF THE URINARY ORGANS—*continued.* | | | | | | | | | |
| *Kidney:* | | | | | | | | | |
| Contusions | 2 | 1 | ... | ... | ... | ... | ... | 1 | ... |
| Sarcoma | 1 | ... | ... | ... | ... | ... | 1 | ... | ... |
| *Bladder:* | | | | | | | | | |
| Cystitis | 4 | 2 | 1 | ... | ... | ... | ... | 1 | ... |
| Calculus | 6 | 2 | 1 | ... | ... | 2 | ... | 1 | ... |
| Incontinence | 2 | 1 | ... | 1 | ... | ... | ... | ... | ... |
| Villous growth | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| *Prostate:* | | | | | | | | | |
| Hypertrophy | 3 | 1 | ... | 2 | ... | ... | ... | ... | ... |
| *Urethra:* | | | | | | | | | |
| Ruptured urethra | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| *Gonorrhœa and its Complications:* | | | | | | | | | |
| Gonorrhœa and balanitis | 14 | 11 | ... | ... | ... | ... | ... | 3 | ... |
| Bubo | 16 | 13 | 1 | 1 | ... | ... | ... | 1 | ... |
| Stricture of urethra | 27 | 24 | ... | 1 | ... | ... | ... | 2 | ... |
| Venereal warts | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Epididymitis | 9 | 9 | ... | ... | ... | ... | ... | ... | ... |
| Perineal fistulæ | 7 | 6 | ... | 1 | ... | ... | ... | ... | ... |
| Prostatic abscess | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Extravasation of urine | 3 | 1 | ... | ... | ... | 2 | ... | ... | ... |
| Rheumatism | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Synovitis | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| DISEASES OF THE GENERATIVE SYSTEM: | | | | | | | | | |
| MALE: | | | | | | | | | |
| *Penis:* | | | | | | | | | |
| Chancre | 4 | 3 | ... | ... | ... | ... | ... | ... | 1 |
| Chancroid | 17 | 16 | 1 | ... | ... | ... | ... | ... | ... |
| Phimosis (congenital) | 14 | 13 | ... | ... | ... | ... | ... | 1 | ... |
| „ (acquired) | 18 | 15 | ... | ... | ... | ... | ... | 3 | ... |
| Paraphimosis | 4 | 4 | ... | ... | ... | ... | ... | ... | ... |
| *Tunica vaginalis:* | | | | | | | | | |
| Hydrocele | 13 | 12 | ... | 1 | ... | ... | ... | ... | ... |
| *Testis:* | | | | | | | | | |
| Undescended | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Tubercular | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Syphilitic | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Orchitis | 4 | 3 | ... | 1 | ... | ... | ... | ... | ... |
| *Cord:* | | | | | | | | | |
| Varicocele | 11 | 10 | ... | ... | ... | ... | ... | 1 | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec.,'88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF THE GENERATIVE SYSTEM—*continued.* | | | | | | | | | |
| FEMALE: | | | | | | | | | |
| *Vulva:* | | | | | | | | | |
| Labial cyst | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| „ abscess | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| „ hæmatoma | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Condylomata | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| *Vagina:* | | | | | | | | | |
| Vaginitis | 4 | ... | 4 | ... | ... | ... | ... | ... | ... |
| Vesico-vaginal fistula | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... |
| *Breast:* | | | | | | | | | |
| Hypertrophy | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Abscess | 6 | ... | 6 | ... | ... | ... | ... | ... | ... |
| Lobular induration | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Strumous disease of | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Cyst | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Adeno-fibroma | 3 | ... | 2 | ... | ... | ... | ... | ... | 1 |
| Sarcoma | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| Scirrhus: | | | | | | | | | |
| i. Primary | 6 | ... | 5 | ... | ... | ... | ... | ... | 1 |
| ii. Secondary | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Ovarian cyst (*vide* report for Arden Ward) | | | | | | | | | |
| DISEASES OF THE BONES: | | | | | | | | | |
| Periostitis and ostitis: | | | | | | | | | |
| i. Acute: | | | | | | | | | |
| Humerus | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Radius | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Femur | 3 | 3 | ... | ... | ... | ... | ... | ... | ... |
| Tibia | 5 | 5 | ... | ... | ... | ... | ... | ... | ... |
| ii. Chronic: | | | | | | | | | |
| Lower maxilla | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Humerus | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Femur | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Tibia | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Metatarsus | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Exostosis: | | | | | | | | | |
| Femur | 1 | ... | ... | ... | 1 | ... | ... | ... | ... |
| Great toe | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Necrosis: | | | | | | | | | |
| Lower jaw | 4 | 2 | ... | 1 | 1 | ... | ... | ... | ... |
| Upper jaw | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Nasal bones | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Humerus | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Ilium | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF BONES—*continued.* | | | | | | | | | |
| Necrosis: | | | | | | | | | |
| Femur | 6 | 4 | 2 | ... | ... | ... | ... | ... | ... |
| Tibia | 6 | 6 | ... | ... | ... | ... | ... | ... | ... |
| Fibula | 3 | 3 | ... | ... | ... | ... | ... | ... | ... |
| Phalanges | 7 | 2 | 5 | ... | ... | ... | ... | ... | ... |
| Caries: | | | | | | | | | |
| Spine | 45 | 10 | 22 | 5 | ... | 4 | ... | 2 | 2 |
| Ilium | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Carpus | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Head of tibia | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Lower end of ulna | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Vomer | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Tarsus | 2 | 1 | ... | ... | 1 | ... | ... | ... | ... |
| DISEASES OF THE JOINTS: | | | | | | | | | |
| Synovitis: | | | | | | | | | |
| i. Acute: | | | | | | | | | |
| Knee | 27 | 18 | 7 | ... | ... | ... | ... | ... | 2 |
| Ankle | 3 | 1 | 1 | 1 | ... | ... | ... | ... | ... |
| Elbow | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| ii. Chronic: | | | | | | | | | |
| Knee | 10 | 6 | 2 | 1 | ... | 1 | ... | ... | ... |
| Ankle | 2 | 1 | ... | ... | ... | ... | ... | ... | 1 |
| Wrist | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Morbus coxæ | 46 | 19 | 16 | 2 | 4 | 2 | 1 | ... | 2 |
| Arthritis: | | | | | | | | | |
| i. Acute: | | | | | | | | | |
| Knee | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| ii. Strumous: | | | | | | | | | |
| Wrist | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Elbow | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Knee | 9 | 4 | 4 | 1 | ... | ... | ... | ... | ... |
| Ankle | 6 | 2 | 2 | ... | ... | ... | ... | 1 | 1 |
| Tarsus | 3 | 1 | 1 | 1 | ... | ... | ... | ... | ... |
| Toe | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Chronic rheumatic arthritis | 3 | 1 | 1 | ... | 1 | ... | ... | ... | ... |
| Ankylosis: | | | | | | | | | |
| i. Fibrous: | | | | | | | | | |
| Jaw | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Shoulder | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Elbow | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... |
| Hip | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Knee | 5 | 2 | 2 | 1 | ... | ... | ... | ... | ... |
| Ankle | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| ii. Osseous: | | | | | | | | | |
| Elbow | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Hip | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Dislocation of semi-lunar cartilage | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |

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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF MUSCLES, FASCIÆ, AND TENDONS: | | | | | | | | | |
| Lateral curvature of spine | 7 | 1 | 6 | ... | ... | ... | ... | ... | ... |
| Ruptured muscles | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Contracted tendons | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| *Bursæ:* | | | | | | | | | |
| Inflammation: | | | | | | | | | |
| i. Acute: | | | | | | | | | |
| Olecranon | 4 | 3 | 1 | ... | ... | ... | ... | ... | ... |
| Patella | 13 | 6 | 7 | ... | ... | ... | ... | ... | ... |
| ii. Chronic: | | | | | | | | | |
| Patella | 11 | 6 | 3 | ... | 2 | ... | ... | ... | ... |
| Bunion | 3 | 1 | 2 | ... | ... | ... | ... | ... | ... |
| Over lower angle of scapula | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Ganglion of wrist | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Compound palmar ganglion | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Semimembranosus | 2 | 1 | ... | 1 | ... | ... | ... | ... | ... |
| DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE: | | | | | | | | | |
| Cellulitis: | | | | | | | | | |
| Face | 4 | 3 | 1 | ... | ... | ... | ... | ... | ... |
| Scalp | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Upper limb | 8 | 5 | 2 | ... | ... | ... | 1 | ... | ... |
| Lower limb | 4 | 2 | 2 | ... | ... | ... | ... | ... | ... |
| Abscess: | | | | | | | | | |
| i. Acute: | | | | | | | | | |
| Scalp | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Jaw | 10 | 7 | 3 | ... | ... | ... | ... | ... | ... |
| Neck | 14 | 4 | 10 | ... | ... | ... | ... | ... | ... |
| Pharynx | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Chest | 2 | 1 | ... | ... | ... | ... | ... | 1 | ... |
| Abdomen | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Axilla | 9 | 5 | 4 | ... | ... | ... | ... | ... | ... |
| Ischio-rectal | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Hand | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Popliteal | 2 | 1 | ... | ... | ... | ... | ... | ... | 1 |
| Leg | 5 | 4 | 1 | ... | ... | ... | ... | ... | ... |
| Foot | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Arm | 3 | ... | 3 | ... | ... | ... | ... | ... | ... |
| ii. Chronic: | | | | | | | | | |
| Neck | 11 | 5 | 4 | 1 | ... | ... | ... | 1 | ... |
| Arm | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Hand | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Chest wall | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Buttock | 3 | 2 | ... | ... | 1 | ... | .. | ... | ... |
| Thigh | 3 | 3 | ... | ... | ... | ... | ... | ... | ... |
| Perinephritic | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |



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TABLE I—*continued.*

| DISEASES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE—*continued.* | | | | | | | | | |
| Gangrene: | | | | | | | | | |
| i. Moist | 2 | ... | 1 | ... | ... | ... | 1 | ... | ... |
| ii. Diabetic | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| iii. Senile | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Sinuses: | | | | | | | | | |
| Parotid fistula | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Face | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Axilla | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Arm | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Groin | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Ulcers: | | | | | | | | | |
| i. Simple: | | | | | | | | | |
| Leg | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Foot | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| ii. Varicose: | | | | | | | | | |
| Leg | 11 | 3 | 7 | ... | ... | ... | ... | ... | 1 |
| iii. Strumous: | | | | | | | | | |
| Neck | 2 | 1 | ... | 1 | ... | ... | ... | ... | ... |
| iv. Traumatic: | | | | | | | | | |
| Leg | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Foot | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| v. Syphilitic: | | | | | | | | | |
| Shoulder | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Leg | 4 | 2 | 2 | ... | ... | ... | ... | ... | ... |
| Onychia | 1 | ... | 1 | ... | ... | .. | ... | ... | ... |
| Pustular ecthyma | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Furuncles | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Eczema | 10 | 4 | 5 | ... | ... | ... | ... | ... | 1 |
| Lupus | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Carbuncle | 5 | 4 | ... | ... | ... | ... | ... | 1 | ... |
| Suppurating corn | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Kerion | 1 | ... | ... | ... | ... | ... | ... | 1 | ... |
| Ingrowing toe-nail | 5 | 2 | 3 | ... | ... | ... | ... | ... | ... |
| Rodent ulcer | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| UNCLASSIFIED: | | | | | | | | | |
| Needle in hand | 3 | ... | 2 | ... | 1 | ... | ... | ... | ... |
| „ in thigh | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... |
| Cystic bronchocele | 2 | ... | ... | ... | 2 | ... | ... | ... | ... |
| Whitlow | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Dog-bite | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Swallowing false teeth | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| „ coins | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Destitution | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |

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TABLE I—*continued.*

| INJURIES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| INJURIES: | | | | | | | | | |
| *Burns:* | | | | | | | | | |
| i. General | 4 | 1 | 1 | ... | ... | 2 | ... | ... | ... |
| ii. Local | 4 | 3 | ... | ... | ... | ... | ... | 1 | ... |
| *Scalds:* | | | | | | | | | |
| i. General | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| ii. Local | 15 | 7 | 7 | ... | ... | ... | ... | 1 | ... |
| *Contusions:* | | | | | | | | | |
| General | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| *Immersion:* | | | | | | | | | |
| Attempted suicide | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| *Poisoning:* | | | | | | | | | |
| Suicidal | 2 | ... | 2 | ... | ... | ... | ... | ... | ... |
| *Injuries of head:* | | | | | | | | | |
| Scalp wounds | 26 | 18 | 6 | ... | ... | 1 | ... | 1 | ... |
| Fractures (vertex) | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| „ (base) | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Concussion of brain | 26 | 20 | 5 | ... | ... | ... | ... | ... | 1 |
| *Injuries of face:* | | | | | | | | | |
| Contusions | 6 | 5 | 1 | ... | ... | ... | ... | ... | ... |
| Wound (contused) | 10 | 4 | 5 | ... | ... | ... | ... | 1 | ... |
| „ (incised) | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Fractured jaw | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| *Injuries of the eye:* | | | | | | | | | |
| Wound of eyelid (contused) | 6 | 3 | 3 | ... | ... | ... | ... | ... | ... |
| „ eyeball (punctured) | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| *Injuries of neck:* | | | | | | | | | |
| Cut throat (suicide) | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Lacerated wound of | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| *Injuries of back:* | | | | | | | | | |
| Fractured spine | 3 | ... | ... | 2 | ... | 1 | ... | ... | ... |
| Concussion of spine | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Contusions | 10 | 8 | 2 | ... | ... | ... | ... | ... | ... |
| *Injuries of chest:* | | | | | | | | | |
| Contusion | 4 | 4 | ... | ... | ... | ... | ... | ... | ... |
| Fractured ribs | 5 | 4 | ... | ... | ... | ... | ... | 1 | ... |
| *Injuries of abdomen:* | | | | | | | | | |
| Contusion | 4 | 3 | ... | ... | ... | ... | ... | ... | 1 |
| *Injuries of pelvis and genitals:* | | | | | | | | | |
| Lacerated wound of perinæum | 3 | 1 | 1 | ... | . | ... | ... | 1 | ... |

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TABLE I—*continued.*

| INJURIES. | Total. | Relieved. | | Not relieved. | | Died. | | In hosp. 31st Dec., '88 | |
|---|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | M. | F. |
| ***Injuries of upper extremity:*** | | | | | | | | | |
| Contusion | 7 | 5 | 2 | ... | ... | ... | ... | ... | ... |
| Wounds (incised) | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| „ (punctured) | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| „ (lacerated) | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| Crushed hand | 1 | ... | 1 | ... | ... | ... | ... | ... | ... |
| „ fingers | 11 | 7 | 2 | ... | ... | ... | ... | 1 | 1 |
| Fractures: | | | | | | | | | |
| Colles' | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Clavicle | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| Humerus | 4 | 3 | 1 | ... | ... | ... | ... | ... | ... |
| Radius | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... |
| „ (compound) | 2 | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Ulna (compound) | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Radius and ulna (comp.) | 1 | ... | ... | ... | .. | 1 | ... | ... | ... |
| ***Injuries of lower extremity:*** | | | | | | | | | |
| Contusions | 22 | 14 | 6 | ... | ... | ... | ... | ... | 2 |
| Wounds (lacerated) | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| „ (incised) | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| „ (contused) | 2 | 2 | ... | ... | ... | ... | ... | ... | ... |
| „ (punctured) | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| Sprained ankle | 9 | 7 | 2 | ... | ... | ... | ... | ... | ... |
| Crushed feet | 4 | 2 | 2 | ... | ... | ... | ... | ... | .. |
| Fractures (simple): | | | | | | | | | |
| Femur (intracapsular) | 3 | 1 | 1 | ... | ... | ... | ... | ... | 1 |
| „ (shaft) | 17 | 13 | 2 | ... | ... | ... | ... | 2 | ... |
| Patella | 4 | 4 | ... | ... | ... | ... | ... | ... | ... |
| Tibia | 15 | 12 | 1 | ... | ... | 1 | ... | 1 | ... |
| Fibula | 5 | 5 | ... | ... | ... | ... | ... | ... | ... |
| Tibia and fibula | 7 | 5 | 1 | ... | ... | ... | ... | 1 | ... |
| Pott's | 8 | 6 | 2 | ... | ... | ... | ... | ... | ... |
| Fractures (compound): | | | | | | | | | |
| Femur | 2 | 1 | ... | ... | ... | 1 | ... | ... | ... |
| Tibia | 4 | 2 | 1 | ... | ... | ... | ... | ... | 1 |
| Badly united Pott's fracture | 1 | ... | ... | 1 | ... | ... | ... | ... | ... |
| Dislocations: | | | | | | | | | |
| Shoulder | 3 | 3 | ... | ... | ... | ... | ... | ... | ... |
| Elbow | 3 | 2 | 1 | ... | ... | ... | ... | ... | ... |
| Thumb | 1 | 1 | ... | ... | ... | ... | ... | ... | ... |
| "Run over"—Shock | 6 | 4 | 2 | ... | ... | ... | ... | ... | ... |

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## TABLE II.—*Operations.*

| OPERATIONS. | Total. | Discharged. | | Died. | | In hosp. 31st Dec., 1888. | | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | |
| **HEAD AND NECK:** | | | | | | | | |
| For epithelioma of lip | 3 | 3 | ... | ... | ... | ... | ... | |
| „ „ tongue | 3 | 2 | ... | ... | ... | ... | 1 | |
| „ „ in cervical glands (recurrent) | 1 | 1 | ... | ... | ... | ... | ... | |
| „ sarcoma of cervical glands | 1 | 1 | ... | ... | ... | ... | ... | |
| „ periosteal sarcoma of jaw | 1 | 1 | ... | ... | ... | ... | ... | Excision of half lower jaw. |
| „ rodent ulcer of face | 2 | 1 | 1 | ... | ... | ... | ... | Excision. |
| „ papilloma of palate | 1 | ... | 1 | ... | ... | ... | ... | |
| „ epulis | 2 | 1 | 1 | ... | ... | ... | ... | |
| „ cleft palate | 2 | 1 | 1 | ... | ... | ... | ... | |
| „ harelip | 1 | ... | 1 | ... | ... | ... | ... | |
| „ ankylosis of lower jaw | 1 | ... | ... | 1* | ... | ... | ... | *From pyæmia. |
| „ caries of spine | 1 | 1 | ... | ... | ... | ... | ... | Incision and drainage. |
| „ necrosis of superior maxilla | 1 | 1 | ... | ... | ... | ... | ... | Sequestrotomy. |
| „ mastoid abscess | 2 | 1 | 1 | ... | ... | ... | ... | |
| „ adenoid vegetations in naso-pharynx | 5 | 4 | ... | ... | ... | ... | ... | Curetting. |
| „ dentigerous cyst | 1 | 1 | ... | ... | ... | ... | ... | |
| „ tracheotomy | 2 | ... | 1 | ... | ... | 1* | ... | *(1) For malignant disease of larynx. (2) For œdema of glottis after poisoning by ammonia. |
| „ trephining | 1 | ... | ... | 1 | ... | ... | ... | For traumatic epilepsy |
| **EYES:** | | | | | | | | |
| For cataract | 9 | 5 | 4 | ... | ... | ... | ... | |
| „ iridectomy | 1 | ... | 1 | ... | ... | ... | ... | |
| „ strabismus | 4 | 2 | 2 | ... | ... | ... | ... | 3 for internal strabismus, 1 for "re-adjustment." |
| Excision of globe | 5 | 3 | 2 | ... | ... | ... | ... | |
| **THORACIC REGION:** | | | | | | | | |
| For empyema | 2 | 2 | ... | ... | ... | ... | ... | |
| „ lipoma of back | 1 | 1 | ... | ... | .. | ... | ... | |
| „ cyst in posterior axillary fold | 1 | 1 | .. | ... | ... | ... | ... | |
| „ lobular induration of breast | 1 | ... | 1 | ... | ... | ... | ... | Excision. |
| „ adenoma of breast | 2 | ... | 2 | ... | ... | ... | ... | |
| „ cyst „ | 2 | ... | 2 | ... | ... | ... | ... | |
| „ sarcoma „ | 1 | ... | 1 | ... | ... | ... | ... | |
| „ scirrhus „ | 5 | ... | 4 | ... | ... | ... | 1 | |
| „ carcinomatous glands in axilla | 1 | ... | 1 | ... | ... | ... | ... | |
| „ sarcoma of back | 1 | 1 | ... | ... | ... | ... | ... | |

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TABLE II—*continued.*

| OPERATIONS. | Total. | Discharged. | | Died. | | In hosp. 31st Dec., 1888. | | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | |
| ABDOMINAL REGION: | | | | | | | | |
| For radical cure of hernia | 5 | 5 | ... | ... | ... | ... | ... | |
| „ strangulated inguinal hernia | 3 | 2 | 1 | ... | ... | ... | ... | |
| „ strangulated femoral hernia | 2 | ... | 2 | ... | ... | ... | ... | |
| „ strangulated umbilical hernia | 1 | ... | 1 | ... | ... | ... | ... | |
| „ spinal caries | 2 | 1 | ... | ... | ... | 1 | ... | Incision and drainage. |
| „ renal calculus | 4 | ... | 2 | 1 | ... | ... | 1 | Nephro-lithotomy. |
| „ nævo-lipoma of abdominal wall | 1 | 1 | ... | ... | ... | ... | ... | Excision. |
| „ caries of ilium | 1 | ... | 1 | ... | ... | ... | ... | |
| „ spina bifia | 1 | ... | ... | ... | 1 | ... | ... | Tapping and injection with Morton's iodine. |
| „ malignant disease of œsophagus | 1 | 1 | ... | ... | ... | ... | ... | Gastrostomy. |
| „ paraplegia from fractured spine | 1 | 1 | ... | ... | ... | ... | ... | Elevation of fragments of laminæ. |
| Abdominal section | 1 | ... | 1 | ... | ... | ... | ... | For exploration of growth (sarcoma) from kidney. |
| ABOUT RECTUM AND ANUS: | | | | | | | | |
| For hæmorrhoids | 16 | 9 | 7 | ... | ... | ... | ... | |
| „ fistula | 13 | 13 | ... | ... | ... | ... | ... | |
| „ fissure | 1 | ... | 1 | ... | ... | ... | ... | |
| „ stricture of rectum | 1 | ... | 1 | ... | ... | ... | ... | Dilatation. |
| „ polypus „ | 1 | 1 | ... | ... | ... | ... | ... | |
| ON THE GENITO-URINARY ORGANS: | | | | | | | | |
| For stricture of urethra: | | | | | | | | |
| (i) External urethrotomy | 3 | 2 | ... | 1* | ... | ... | ... | *From septicæmia after extravasation of urine. |
| (ii) Internal urethrotomy | 1 | 1 | ... | ... | ... | ... | ... | |
| (iii) Dilatation | 20 | 20 | ... | ... | ... | ... | ... | |
| For phimosis | 32 | 32 | ... | ... | ... | ... | ... | |
| „ paraphimosis | 4 | 4 | ... | ... | ... | ... | ... | |
| „ varicocele | 8 | 7 | ... | ... | ... | 1 | ... | |
| „ venereal warts | 2 | 2 | ... | ... | ... | ... | ... | |
| „ vesical calculus | 6 | 3 | 1 | 2 | ... | ... | ... | 5 lithotomy, 1 vaginal lithotomy. |
| „ radical cure of hydrocele | 5 | 5 | ... | ... | ... | ... | ... | |
| Castration | 2 | 2 | ... | ... | ... | ... | ... | For tubercular testis. |

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TABLE II—*continued.*

| OPERATIONS. | Total. | Discharged. | | Died. | | In hosp. 31st Dec., 1888. | | Remarks. |
|---|---|---|---|---|---|---|---|---|
| | | M. | F. | M. | F. | M. | F. | |
| ON UPPER LIMB: | | | | | | | | |
| For myeloid sarcoma of head of humerus | 1 | ... | ... | ... | ... | 1 | ... | Excision of head of humerus. |
| „ lipoma of finger and palm | 1 | 1 | ... | ... | ... | ... | ... | Excision. |
| For necrosis of ulna | 1 | ... | 1 | ... | ... | ... | ... | Sequestrotomy. |
| „ fibrous ankylosis of shoulder | 1 | ... | 1 | ... | ... | ... | ... | |
| „ dislocation of elbow | 2 | 2 | ... | ... | ... | ... | ... | Excision of elbow. |
| „ pulpy disease of wrist | 1 | ... | 1 | ... | ... | ... | ... | „ wrist. |
| „ ganglion of wrist | 2 | 1 | 1 | ... | ... | ... | ... | |
| „ paralysis of ulnar nerve | 1 | 1 | ... | ... | ... | ... | ... | Removal of callus. |
| ON LOWER LIMB: | | | | | | | | |
| For housemaid's knee | 8 | 1 | 7 | ... | .. | ... | ... | |
| „ in-growing toe-nail | 4 | 2 | 2 | ... | ... | ... | ... | Avulsion. |
| „ lipoma of buttock | 1 | ... | 1 | ... | ... | ... | ... | Excision. |
| „ genu valgum | 6 | 2 | 4 | ... | ... | ... | ... | 3 Macewen's operation, 3 Ogston's operation. |
| „ talipes varus | 3 | 1 | ... | ... | ... | ... | 2 | 2 excision of tarsal arch, 1 excision of external malleolus. |
| „ „ planus | 6 | 5 | 1 | ... | ... | ... | ... | 4 "firing," 1 excision of scaphoid, 1 excision of external malleolus. |
| „ morbus coxæ | 8 | 4 | 4 | ... | ... | ... | ... | 4 excision of hip, 1 sequestrotomy of acetabulum, 1 incision and drainage. |
| „ necrosis of femur | 1 | ... | 1 | ... | ... | ... | ... | Sequestrotomy. |
| „ „ tibia | 2 | 2 | ... | ... | ... | ... | ... | „ |
| „ caries of tarsus | 2 | 2 | ... | ... | ... | ... | ... | |
| „ contracted hip | 1 | 1 | ... | ... | ... | ... | ... | |
| „ „ knee | 1 | 1 | ... | ... | ... | ... | ... | |
| „ chronic synovitis of knee | 1 | ... | 1 | ... | ... | ... | ... | Incision. |
| AMPUTATIONS: | | | | | | | | |
| Of fingers | 2 | 2 | ... | ... | ... | ... | ... | |
| „ toes | 4 | 3 | 1 | ... | ... | ... | ... | |
| Through knee-joint | 1 | ... | 1 | ... | ... | ... | ... | For contracted knee. |
| „ thigh | 3 | 1 | 1 | 1 | ... | ... | ... | 1 for "pulpy" knee, 2 for compound fracture of femur. |
| „ forearm | 1 | ... | 1 | ... | ... | ... | ... | For suppuration of palm and wrist. |
| „ arm | 1 | 1 | ... | ... | ... | ... | ... | For "pulpy" elbow, with sinuses. |
| „ hip-joint | 2 | ... | 1 | ... | 1 | ... | ... | For old hip disease. |

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TABLE III.—*Cases of Infectious Disease during the year* 1888.

| No. | Sex. | Age. | Date of admission. | Disease for which admitted. | Hospital disease. | Result and date. |
|---|---|---|---|---|---|---|
| 1 | F. | 35 | January 4th | Puerperal pyæmia | Pyæmia | Died, April 29th. |
| 2 | M. | 23 | „ 20th | Lipoma of finger and palm | Scarlatina | Relieved, March 24th. |
| 3 | M. | 30 | „ 30th | Facial erysipelas | Erysipelas | Relieved, February 3rd. |
| 4 | M. | 16 | March 26th | Furuncle, root of nose; erysipelas | „ | „ April 4th. |
| 5 | M. | 48 | April 4th | Renal calculus | Pyæmia | Died, June 4th. |
| 6 | M. | 28 | „ 19th | Erysipelas of scalp | Erysipelas | Relieved, May 10th. |
| 7 | M. | 22 | June 7th | Cellulo-cutaneous erysipelas of left hand and forearm | „ | „ June 19th. |
| 8 | M. | 2 | „ 25th | Facial erysipelas | „ | „ June 27th. |
| 9 | M. | 33 | July 21st | Suppuration in middle ear | Pyæmia | Died, August 15th. |
| 10 | M. | 11 | August 1st | Periostitis of tibia | Erysipelas | Relieved. |
| 11 | M. | 50 | „ 11th | Ankylosis of jaw; thrombosis of facial vein | Pyæmia | Died, September 30th. |
| 12 | M. | 48 | September 1st | Suppurating hæmatoma of dorsum of hand | Erysipelas | Relieved. |
| 13 | M. | 70 | October 5th | Incised wound of leg; erysipelas | „ | „ October 16th. |
| 14 | F. | 64 | November 27th | Wound of nose; facial erysipelas | „ | „ December 4th. |
| 15 | M. | 61 | Oct. 24th, 1887 | Chronic synovitis of knee; incision | Pyæmia | Died, Feb. 17th, 1888. |
| 16 | M. | 12 | Dec. 19th, 1887 | Abscess of thigh | Scarlatina | |

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# REPORT OF CASES IN "ARDEN WARD"

## (FOR DISEASES OF WOMEN)

## DURING THE YEAR 1888.

By F. B. BETTS.

| | | |
|---|---|---|
| Number of patients under treatment, January 1st, 1888 | | 10 |
| " " admitted during 1888 | | 104 |
| Total | | 114 |
| Number of patients discharged during the year: | | |
| Cured or relieved | 90 | |
| Unrelieved | 6 | |
| Transferred to other wards | 2 | |
| | — | 98 |
| Died* | | 8 |
| Under treatment, December 31st, 1888 | | 8 |
| Total | | 114 |

* 2 pelvic peritonitis, 1 pelvic cellulitis, 2 general peritonitis, 1 ruptured extra-uterine fœtation, 1 hysterectomy, 1 epithelioma of cervix.

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## Cases in "Arden Ward."

| Nature of case. | No. of case. | Initials. | Age. | Result. | No. in register. | Remarks, treatment, &c. |
|---|---|---|---|---|---|---|
| **Uterus:** | | | | | | |
| Subinvolution | I | E. T. | 29 | Relieved | L. 57 | After parturition. |
| | II | C. H. | 18 | „ | L. 234 | After parturition, also retroversion. Pessary. |
| | III | M. C. | 37 | „ | L. 65 | After parturition. |
| Retroflexion | I | E. B. | 36 | „ | L. 35 | Pessary introduced. |
| | II | M. M. | 33 | Left | L. 51 | Refused treatment. |
| | III | M. S. | 33 | „ | L. 53 | Refused treatment. |
| Retroversion | I | M. G. | 45 | Relieved | ... | Pessary introduced. |
| | II | E. M. | 22 | „ | L. 202 | Pessary introduced. |
| Prolapse | I | E. S. | 60 | „ | L. 31 | Pessary introduced. |
| | II | H. S. | 44 | „ | L. 38 | Pessary introduced. |
| | III | H. B. | 32 | „ | L. 43 | Pessary introduced. Aborted three weeks after discharge. |
| | IV | G. L. | 61 | „ | L. 198 | Pessary introduced. Nearly all cystocele. |
| | V | E. G. | 37 | „ | M. 21 | Ring pessary. |
| | VI | L. H. | 26 | „ | M. 19 | First degree. |
| | VII | A. S. | 51 | „ | L. 151 | Cystocele. Pessary introduced. |
| Polypus | I | M. C. | 43 | Cured | L. 160 | Removed by wire ecraseur. |
| | II | H. G. | 35 | „ | M. 7 | Removed by scissors. |
| | III | M. W. | 50 | „ | M. 15 | Removed by scissors. Inversion of uterus during operation. |
| | IV | C. M. | 22 | „ | L. 143 | Mucous, twisted off. |
| Fibroid | I | L. P. | 31 | Death | L. 11 | Abdominal section and removal. |
| | II | F. J. | 38 | Cured | L. 80 | Pil. ergotinæ. Removed by abdominal section. |
| | III | H. T. | 35 | „ | L. 84 | Pil. ergotinæ. Incision of mucous membrane over fibroid and removal. |
| | IV | A. H. | 43 | Relieved | L. 101 | Impacted in pelvis; raised by stem pessary and sent out wearing Hodge pessary. |
| | V | A. R. | 36 | „ | L. 176 | Fibroid in anterior wall. Ergot. |
| | VI | M. C. | 32 | „ | L. 220 | Ergot. |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | VII | M. T. | 45 | „ | L. 242 | Sarcomatous. Ergotine. |
| | VIII | A. H. | 41 | Death | L. 231 | After electrolysis from peritonitis. |
| | IX | J. C. | 39 | Cured | L. 246 | Electrolysis, 28 applications of ten minutes each. Sclerotic acid and ergotine. |
| | X | L. D. | 43 | „ | M. 1 | Removed by abdominal section with body of uterus. |
| | XI | S. M. | 49 | Relieved | M. 17 | Small fibroid polypus removed with scissors; bulk of tumour left. |
| Malignant disease . . | I | M. K. | 39 | „ | K. 250 | Epithelioma of cervix. |
| | II | S. C. | 29 | Death | L. 55 | Epithelioma of cervix. Actual cautery twelve months ago. Death from shock following actual cautery. |
| | III | E. H. | 37 | Relieved | L. 126 | Actual cautery and spoon; recurrence in one month. |
| | IV | E. B. | 43 | „ | L. 137 | Sarcoma of body. Removed as far as possible. |
| | V | E. B. | 37 | „ | L. 206 | Pacquelin's cautery to cervix. |
| | VI | C. S. | 43 | Unrelieved | L. 222 | Too extensive for operation. |
| | VII | M. M. | 59 | „ | L. 224 | Too extensive for operation; bladder and rectum implicated. |
| Chronic metritis . . | I | B. H. | 29 | Relieved | L. 192 | Interior of uterus curetted. |
| Syphilitic ulceration of cervix | I | E. B. | 31 | „ | L. 236 | Improved under specific treatment. |
| OVARIES: | | | | | | |
| Cystic tumour . . | I | J. W. | 66 | Cured | L. 214 | Abdominal section. |
| | II | E. B. | 30 | „ | L. 113 | Abdominal section. Multilocular cyst. |
| Ovaritis (chronic) . . | I | A. P. | 36 | Relieved | L. 17 | |
| | II | L. S. | 25 | „ | L. 15 | |
| | III | E. F. | 25 | „ | L. 153 | |
| Hydrosalpynx . . | I | J. W. | 25 | Cured | L. 170 | Burst without interference; considerable watery discharge *per vaginam*. |
| VAGINA, URETHRA, &c.: | | | | | | |
| Labial cyst . . . | I | E. C. | 35 | „ | M. 31 | Opened and plugged. |
| | II | E. W. | 45 | „ | L. 196 | Opened and plugged. |
| | III | M. D. | 28 | Relieved | L. 228 | Opened and plugged. |
| | IV | E. B. | 37 | Cured | L. 9 | Opened and sac dissected out. |
| | V | E. A. | 19 | „ | L. 27 | Opened and sac dissected out. |

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## Cases in "Arden Ward"—*continued.*

| Nature of case. | No. of case. | Initials. | Age. | Result. | No. in register. | Remarks, treatment, &c. |
|---|---|---|---|---|---|---|
| Vesico-vaginal fistula . | I | S. N. | 33 | Unrelieved | L. 186 | Operated on for third time. Sent to Infirmary. |
| Vaginismus . . . | I | E. W. | 50 | Cured | L. 1 | Ulceration and fissuring of vaginal orifice. |
| Urethral caruncle . . | I | A. F. | 62 | Relieved | M. 11 | Declined operation. |
| | II | C. P. | 60 | Cured | L. 74 | Scalpel and cautery. |
| Disorders of Menstruation: | | | | | | |
| Dysmennorrhœa . . | I | E. L. | 37 | Relieved | L. 200 | |
| | II | E. C. | 23 | „ | M. 9 | Division of cervix; relief not marked. |
| | III | C. K. | 19 | Cured | L. 71 | Division of cervix; great relief. |
| | IV | B. K. | 23 | Relieved | L. 188 | Division of cervix. |
| Menorrhagia . . . | I | A. M. | 33 | „ | L. 45 | Ergot. |
| | II | L. W. | 27 | „ | L. 164 | |
| | III | E. M. | 36 | „ | L. 240 | Infus. Ergot. Recentis. |
| | IV | S. M. | 34 | Cured | M. 35 | Alcoholic. |
| | V | A. A. | 22 | „ | L. 145 | |
| | VI | E. I. | 47 | Relieved | L. 210 | Curetted. Fundal endometritis. Thrombosis of veins of leg following operation. |
| | VII | M. F. | 29 | „ | M. 13 | |
| Menopause . . . | I | E. W. | 42 | „ | L. 238 | |
| | II | E. D. | 48 | „ | L. 119 | Sclerotic acid. Hot douche. Menorrhagia. |
| | III | E. W. | 56 | „ | L. 105 | Menorrhagia. |
| Disorders during and after Pregnancy: | | | | | | |
| Ruptured perineum . | I | A. G. | 37 | „ | L. 180 | Instrumental delivery; operation successful. |
| | II | E. S. | 30 | Cured | L. 178 | Operation successful. |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Pregnancy | I | E. C. | 24 | Relieved | L. 244 | Incontinence of urine. |
| | II | H. E. | 22 | „ | L. 6 | Transferred from Queen Adelaide; five months pregnant. |
| | III | E. H. | 33 | „ | L. 114 | Exostosis of sacrum. Labour induced at seven months. |
| | IV | H D. | 32 | „ | L. 135 | Excessive vomiting. |
| Retroverted gravid uterus | I | E. B. | 23 | „ | L. 174 | Rectified, and pessary introduced. |
| Phlegmasia dolens | I | E. P. | ... | „ | L. 39 | Commenced nine days after parturition. |
| Threatened abortion | I | M. R. | 32 | „ | L. 133 | Treatment with ergot, and delivered in hospital three months later of a living eight months' child. |
| Sequela of abortion | I | L. I. | 27 | Cured | M. 33 | Placenta removed. |
| | II | E. C. | 34 | „ | M. 23 | Placenta removed under ether. |
| | III | E. R. | 37 | „ | L. 190 | |
| | IV | R. G. | 29 | Relieved | L. 89 | |
| | V | H. W. | 25 | „ | L. 19 | Placenta removed. |
| Extra-uterine fœtation | I | G. B | 27 | Unrelieved | L. 147 | Patient insisted on going out. |
| | II | L. A. | 30 | Death | L. 117 | Ruptured at sixth month. |
| PELVIC: | | | | | | |
| Pelvic peritonitis | I | A. R. | 29 | Relieved | L. 29 | Chronic. |
| | II | M. T. | 17 | Death | L. 59 | After premature delivery, fifteen days before admission. |
| | III | C. I. | 24 | Relieved | L. 76 | Following miscarriage. |
| | IV | M. W. | 28 | „ | L. 93 | Subacute. |
| | V | C. H. | 30 | „ | L. 131 | Chronic. |
| | VI | H. A. | 24 | Death | L. 123 | Following miscarriage, one month previous to admission. |
| Pelvic cellulitis | I | E. C. | 35 | Relieved | L. 69 | Puerperal. |
| | II | A. M. | 27 | „ | L. 61 | Subacute. |
| | III | E. W. | 47 | „ | L. 141 | Chronic with ovaritis. |
| | IV | L. O. | 28 | „ | L. 162 | Subacute. |
| | V | J. D. | 40 | „ | M. 25 | Chronic. |
| Pelvic hæmatocele | I | M. C. | 30 | Cured | L. 3 | Tumour extended to umbilicus. |

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CASES IN "ARDEN WARD"—*continued.*

| Nature of case. | No. of case. | Initials. | Age. | Result. | No. in register. | Remarks, treatment, &c. |
|---|---|---|---|---|---|---|
| General peritonitis | I | M. D. | 56 | Death | L. 97 | Malignant disease of ovaries and peritoneum. |
| Puerperal septicæmia | I | S. B. | 21 | Cured | L. 166 | Illness commenced second day of puerperium. |
| UNCLASSIFIED: | | | | | | |
| Hysteria | I | B. K. | 20 | Relieved | ... | |
| Neurasthenia | I | J. P | 28 | „ | L. 49 | Hystero-epileptiform seizures. |
| Coccydynia | I | P. P. | 40 | „ | M. 29 | Result of fall, thickening round coccyx. |
| Morbus cordis | I | C. S. | 36 | Unrelieved | L. 182 | Swelling of abdomen. Transferred to "Tillard Ward." |
| Abscess of abdominal wall | I | M. D. | 40 | Cured | ... | Abscess opened. |
| Retention of urine | I | J. B. | 41 | Relieved | L. 87 | |
| | II | C. B. | 47 | „ | L. 129 | |
| Acute mastitis | I | H. B. | 27 | Cured | L. 109 | Sore nipples. Opened and drained. |

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# LIST OF PATHOLOGICAL SPECIMENS

## ADDED TO THE MUSEUM DURING 1889.

By CHARLES A. HEBBERT.

During the present year 114 new pathological specimens have been added to the museum, some of them to illustrate special features in pathology, and others on account of their rarity or exceptional interest, either clinical or pathological.

A brief account of some of the specimens added to the medical portion is given, but as a catalogue of the surgical portion is in progress, it has been considered unnecessary to describe the specimens added to that section. Particular attention is suggested to specimens Nos. 2, 4, 9, 11, 14, 60, 92, 93, 95, 99, 100, 105 107, 110, 111, 112, 113, 114.

The specimens have been marked in the order of their addition, and the permanent numbers have not yet been recorded.

1. *Malignant disease of cervical glands.*—A tumour five inches long by four inches deep, laid open by a longitudinal section. It is situated on the left side of neck, and has displaced the trachea to the right. Histologically it is epithelioma.

2. *Epithelioma of pharynx.*—This specimen is mounted in glycerine and the colour preserved. The cancer is two and a half inches long, situated in the upper part of the œsophagus, and has encroached in the trachea so that there is a communication between the two tubes just below the

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larynx. The growth is seen just appearing on the edges of the perforation, and the whole circumference of the œsophagus is involved.

3. *Laryngitis.*—This specimen is from a case of acute phthisis and is mounted in glycerine. It shows extravasations of blood into both aryteno-epiglottic folds.

4. *Small white kidney.*—This measures two and a half inches long by one and three quarter inches wide. The section is smooth and white in colour with a much diminished cortex. The external surface is granular and the capsule adherent.

5. *Chronic pericarditis in an adult.*—The pericardium is stripped off and sewn up to the base, showing the thick firm deposit on both surfaces. The mediastinal glands are much enlarged at the base and some are caseous.

6. *Acute tubercular pericarditis in a child.*—The pericardium is turned back and both visceral and parietal layers are seen covered by a "shaggy lymph." Put up in glycerine.

7 and 8. *Enlargement of heart.*—No. 7 shows marked dilatation of the right ventricle, and No. 8 is from a case of chronic Bright's disease, and shows hypertrophy of the left ventricle. The rounded appearance of the hearts is well shown.

9. *Aneurysm of left ventricle.*—The left ventricle is seen opened, and at the lower part of the inner wall is a circular depression two inches in diameter. The wall is much thinned and the endocardium destroyed, the surface being covered by a rough deposit of decolourised clot.

10. *Cancer of Heart.*—Heart laid open showing secondary cancerous deposit in the wall of the left ventricle.

11. *Uterus with false passage from a case of criminal abortion.*—The organ is opened and on the posterior wall is seen a groove which begins at the os internum, traverses the whole thickness of the wall, and pierces the posterior surface just below the fundus. In the jar is a piece of cotton wool found in the peritoneal cavity, and which was thrust through the uterus presumably on the point of a sound. Presented by T. Bond, Esq.

12. *Malignant disease of cervical glands.*—There is a large irregular mass about four inches long on the left of the larynx, consisting of the cervical glands affected by a soft

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cancer. The œsophagus is opened, and the left arytenoepiglottic fold is seen to be involved by secondary deposit.

13. *Pericarditis from a case of chronic nephritis.*—The pericardium is turned up, and the surface of the heart is seen covered by a thick layer of firm "honeycomb" lymph.

14. *Ulceration of intestine.*—This specimen is one of ulceration of the small intestine from the above case, and shows numerous round and oval ulcers with fairly clear cut edges. The floor of the ulcers is in places merely the peritoneum. They vary in size from an eighth of an inch to one inch in diameter. One or two show a black stained slough.

15. *Polypus of heart.*—The ventricles are laid open, and at the apices are seen well-marked instances of cardiac polypi. These are round whitish bodies about the size of a marble, with a thick fibrous wall, and soft semi-fluid contents. They are adherent to the internal wall of the ventricles, and one is opened to show its interior.

16. *Infarction of kidney.*—In glycerine. This specimen shows very clearly the yellowish colour of the wedge-shaped areas of the infarctions as contrasted with the deep red colour of the kidney substance. There are three infarcts, the bases being towards the surface of the kidney.

17 and 18. *Disease of knee-joint.*

19. *Disease of ankle-joint.*

20. *False passage in neck of bladder.*

21. *Pulpy degeneration of knee-joint.*

22. *Tubercular testis injected.*

23. *Bursa patellæ.*

24. *Sebaceous cyst.*

25. *Melanotic sarcoma.*

26. *Bones of ankle-joint from case of gout.*

27. *Sarcoma of femur.*

28. *Scirrhus of breast.*

29. *Adenosarcoma of breast.*

30. *Scirrhus of breast.*

31. *Cancer of tongue and jaw.*

32. *Intussusception.*

33. *Sebaceous cyst.*

34. *Cancer of œsophagus.*—This shows stricture of the commencement of the œsophagus from deposit in the walls.



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The growth seems to surround the tube, and the mucous membrane is much wrinkled. The stricture is about a quarter of an inch in diameter.

35. *Gastrostomy.*

36. *Bursa patellæ.*

37. *Spina bifida.*

38. *Hæmorrhage into muscle.*

39. *Cancer of root of tongue.*

40. *Fracture of patella, showing fibrous union.*

41. *Congenital hernia.*

42. *Myeloid sarcoma of tibia.*

43. *Periosteal sarcoma of tibia.*

44. *Sarcomatous tumour in gastrocnemius.*

45. *Exostosis of femur.*

46. *Fracture of leg of Arctic fox.*

47. *Fracture of pelvis.*

48, 49. *Fracture of tibia.*

50, 51, 52. *Fractures of femur.*

53. *Scapula and head of humerus from case of osteitis deformans.*

54. *Abscess cavity in lower jaw.*

55. *Vertebræ with exostoses.*

56. *Fracture of skull.*

57. *Recent fracture of femur with no attempt at union.*

58. *Sarcoma of tibia.*

59. *Perforation of aortic cusps.*—This specimen shows a clean circular perforation of the middle cusp.

60. *Tubercular ulceration of stomach.*—The jar contains two stomachs opened with mucous surfaces turned outwards. They both show a number of small round ulcers with thickened edges. They are taken from two cases of general tuberculosis.

61. *Accidental wound of intestine during operation for strangulated hernia.*

62. *Ulcer of the stomach.*—The stomach is turned inside out and shows a large round ulcer five-eighths of an inch in diameter situated on the lesser curvature close to the pylorus. The ulcer has perforated the walls. In the pylorus is a small oval ulcer half an inch long which has not destroyed the entire thickness.

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The case was one of chronic Bright's disease, and both Nos. 13 and 14 were from the same case.

63. *Spina bifida.*

64. *Similar case.*

65. *Femur from case of rickets.*

66. *Ribs from same case.*

67. *Bone of arm from same case.*

68. *Radius from case of rickets.*

69. *Spina bifida.*

70. *Spina bifida.*

71. *Bones from case of cretinism.*

72. *Fracture of femur.*

73. *Ligatured arteries.*

74, 75. *Bursa patellæ.*

76. *Sebaceous cyst.*

77. *Patellæ from case of rheumatoid arthritis.*

78. *Patella from case of gout.*

79. *Knee-joint from case of rheumatoid arthritis.*

80. *Atheroma of ankle.*

81, 82, 83. *Colloid cancer.*

84. *Sarcoma of tibia.*

85. *Tuberculosis of lung.*—The surface of the lung is studded with small grey nodules most of them about the size of a mustard seed. The whole organ is consolidated.

86. *Fracture of bone, case of rickets.*

87. *Cancer of pharynx.*—This specimen shows that the whole thickness of the walls of the pharynx has been invaded. The growth has ulcerated, entirely destroying the mucous surface of the pharynx and the œsophagus to the extent of about 1 inch. The opposite side shows that the cancer has involved the wall of trachea just below the larynx.

91. *Aneurysm of the aorta.*—This is a sacculated aneurysm, with a circular orifice 2½ inches in diameter, and it is about the size of a small orange, situated just above the posterior aortic cusp, and involves the whole length of the ascending portion of the arch. The inner coat of the artery has disappeared, and the surface of the aneurysm is covered by a thickish layer of organised clot.

92. *Mediastinal tumour.*—This is a specimen of a large growth situated in the superior and anterior mediastina; the

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mass is 6½ inches long, 4½ inches wide, and about 3 inches thick; it is yellowish-white in colour, firm in consistence, and the surface is irregular and somewhat nodulated. A section of the tumour shows a fairly uniform surface. The lungs are widely separated and displaced backwards and outwards. The heart is seen between the tumour and the anterior margin of the left lung, the apex being on a level with the base of the lung.

Section of the lungs shows secondary deposit in both organs, this being of a softer nature than that of the mediastinal tumour.

It is chronic inflammatory in nature. The case is referred to in Dr. Hebb's Report.

93. *Congenital malformation of the heart.*—This is a specimen showing the heart and lungs. The heart is laid open, and on the anterior aspect the right ventricle is seen open, with a large vessel issuing from its base. On the left side of the cavity is a circular opening communicating with the left ventricle. This is an imperfect septum. There is no vessel issuing from the left ventricle, the only other opening to that cavity being the auriculo-ventricular. The vessel given off from the right ventricle is wide, and from it spring the innominate, the left carotid, and left subclavian arteries; in the posterior wall is a small channel leading into a chamber from which pass vessels to the two lungs. This represents the pulmonary artery. The wall of the right ventricle is much thickened and the cavity dilated. The left ventricle is small, with a wall much thinner than that of the right ventricle.

95. *Double stomach.*—This specimen shows that the stomach is divided into two large cavities by a constriction in the centre 1½ inches in diameter. The organ is turned inside out in order to show that the mucous membrane is normal over the whole surface. There is no cicatricial tissue about the constriction, and the condition is probably congenital. Each half of the stomach measures 8 inches long. The cardiac half being 5½ inches in depth and the pyloric half being 4½ in depth.

98. *Carcinoma of pylorus.*—The stomach is laid open, showing a hard, cancerous mass situated round the pylorus.

Just below the pylorus is an artificial opening, which com-

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municates with the outside by a wound in the abdominal wall.

On the other side of the specimen is seen the external opening, the edges of the incision into the stomach being sewn to the abdominal walls.

99. *Cancer of cardiac end of the stomach.*—The stomach is laid open, and just below the cardiac orifice is seen a mass of hard cancer involving the circumference of the left end of the stomach which measures about 1 inch in diameter. The cavity of the stomach is very small.

100. *Uterus with dermoid cysts.*—The uterus is opened in the mid line, on the right side there is a tumour attached to its wall, 3 inches long, by 2 inches wide, the cut section shows it is fibroid in character. To the left of the uterus are two cysts, in the course of the Fallopian tubes, each cyst is nearly globular and about 1½ inches diameter. They are separated by an interval of about 1 inch.

On the posterior wall of the inner cyst is seen an incisor tooth, and also a small patch of true skin about 1½ inches in diameter.

The outer cyst contained a small mass of black hair.

101. *Intra-capsular fracture of head of femur.*

102. *Meningitis.*—This specimen shows the lateral ventricle of the brain very much dilated. The membranes were acutely injected, but the alcohol has destroyed the appearance of injection.

103. *Fracture of humerus.*

104. *Stenosis of auriculo-ventricular valves.*—In this specimen the muscular substance of the heart has been removed, and only the tissue just around the valves left. The front of the specimen shows the valves from above. The orifices are much diminished, and the cusps greatly thickened and blended together.

105. *Hæmorrhage on surface of brain.*—The upper half of the cerebrum is shown suspended by the falx cerebri and dura mater of the surface of the hemisphere.

There is extravasation of blood over the surface of the whole of the left frontal lobe, the lower half of the parietal, the lower and outer part of the occipital and the infra-marginal convolution of the temporo-sphenoidal lobe.

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There is also some slight hæmorrhage over the upper half of the parietal and occipital lobes.

The right half shows slight extravasation over the right parietal lobe.

Examination of the under surface of the specimen shows that the blood also escaped into the substance of the brain in the left side, and extended into the right lateral ventricle.

106. *Congenital hernia.*

107. *Tuberculosis of vesiculæ seminales.*

108. *Elephantiasis scroti.*

109. *Aneurysm of popliteal artery.*

110. *Tumour of cerebellum.*—The cerebellum is divided in half, and the cut surface shows that the lower portion of the cerebellum is occupied by a growth of a greyish colour, nearly globular in form, and measuring 1½ inches in diameter.

111. *Spinal cord from above case.*—The membranes are opened, and the surface of the spinal cord is seen; the cord is apparently much enlarged, and the surface irregular. This increase in size and nodular appearance is due to a growth affecting principally the white substance of the cord.

112. Vegetation on aortic and mitral valves.

113, 114.—These two specimens are instances of vegetations on the tricuspid valves.

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# THE GUTHRIE SOCIETY.

## Notice by a Member of the Committee.

The Guthrie Society had its origin in a meeting called together by the Dean of the Medical School and other members of the Staff on the 6th of December, 1887. At this meeting the advantages and possibilities of a Medical and Scientific Debating Society were discussed, and a Provisional Committee appointed, whose duty it should be to draw up a code of rules and otherwise put the suggestions advanced into practical shape.

By some it was thought good that the work of the Society should be of an entirely professional character, limited to the discussion of Medicine and Surgery; but the final decision was that such a plan might present disadvantages, first, because the senior students alone could take a profitable interest in its debates, and secondly, because the exclusive discussion of Medical and Surgical topics would be to many students wanting in the recreative element—an element till then furnished only by the Students' Smoking Concerts, which functions did not invariably or of necessity contribute to the intellectual benefit of the community.

It was felt, therefore, that the meetings of the Society should be evenings of recreation, social in character, and devoted to the discussion of such topics—whether professional, scientific, or literary—as should be deemed of interest to the students; and that there should practically be no limit to the range of

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subjects treated, except that the founders of the Society decided to exclude Religion and Politics, as being topics the discussion of which in not very competent hands might lead to a maximum of disagreement and a minimum of profit.

Hitherto the career of the Society has been eminently successful. For not only does the variety of its topics afford interest to every shade of intellect, but the occasional introduction of the convivial element (in the sober form of a Staff and Students' Smoking Concert) amply ministers to the tastes of those who are wont to regard that element as of primary importance to an evening's enjoyment.

Although essentially a Students' Association, the Guthrie Society is partly officered by members of the Staff. This cannot but be regarded as an excellent arrangement, for not only are the members of the Staff qualified *ex officio* to enlighten the students on professional matters, but their labours in a wider sphere have contributed greatly to the Society's benefit. Dr. Sturges was elected the first President.

The annual subscription is moderate, and by payment of one guinea the student becomes a life member. His membership (whether for life or for the year) entitles him to read papers before the Society, to join in the debates, to borrow for his own use the books, microscopes, specimens, &c. which are the property of the Society, and to obtain books from Lewis's Library, to which the Society subscribes.

The Society has been eminently popular, its meetings largely attended both by students and their friends. Nearly all the students are members; indeed, it is a recognised thing that every student on entering shall become a member, for his own personal benefit as well as for that of the Society.

In addition to the Society's value in conveying direct information concerning matters of general interest, it offers an excellent opportunity for the practice of debate. Facility in public speaking may at any time prove useful to a member of our profession, and this facility can only be gained by practice, such as the Guthrie Society affords. Anyone possessed of ideas or of facts which he is unwilling to keep to himself has here an opportunity of communicating them to his fellows and of receiving at their hands criticism favorable or adverse, as the case may be, but in any case valuable to himself.

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The Society meets once in every month during the winter and summer sessions. The meetings begin at 8 p.m. and last for about two hours. Papers are read or specimens exhibited and described, the agenda being previously settled by the Committee and posted up by the Secretary of the Society. In the selection of papers sent in no differences are made on the score of seniority: students of all years are invited to contribute, and things are so arranged that students of every year shall be represented by their own committee-man. By these means the utmost fairness and equality are maintained, nor has anything of the nature of jealousy or unpleasantness ever disturbed the harmony of the Society. All papers are subjected to fair and searching criticism by the assembled members, and no errors or false views would be suffered to pass unnoticed. The Society has never shown itself to be animated by any spirit of mutual admiration or universal tolerance, and from a due appreciation of this fact none have come forward save those who have been prepared and able to defend their views.

Any association of this nature may be welcomed as an adversary of pedantry and shallowness, and the Guthrie Society, by representing and encouraging a wider culture and a more catholic education than is open to the average medical student, may hope to be of use in furthering a determination which should constitute the ambition of every professional man—the determination to rise above the average.

The following are some of the subjects which have been brought forward at the meetings:

Case of Retention of Urine in a Boy, by Eber Caudwell.

Darwin, by R. H. Reynolds.

The Advisability of a Knowledge of Aural Surgery in General Medicine, by P. M. Yearsley.

Some Points of Contrast between Hospital and Private General Practice, by F. S. Lambert.

Insanity, by A. W. Harrison.

The Relation of Chemistry to Medicine, by Llewelyn Lewis.

The Nests and Eggs of Birds, by Charles Stonham.

The Utility of Scepticism, by R. H. Reynolds.

Memorial Brasses, by P. M. Yearsley.



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# WESTMINSTER HOSPITAL.

## HOSPITAL STAFF.

**Consulting Physician and Surgeons.**
Dr. FINCHAM. Mr. BARNARD HOLT. Mr. HOLTHOUSE.

**Physicians.**
Dr. STURGES. Dr. ALLCHIN. Dr. DONKIN.

**Surgeons.**
Mr. COWELL. Mr. RICHARD DAVY. Mr. MACNAMARA.

**Physicians in Charge of Out-Patients.**
Dr. DE HAVILLAND HALL. Dr. HUGHES BENNETT.

**Assistant Physicians.**
Dr. MURRELL. Dr. HEBB.

**Surgeon in Charge of Out-Patients.**
Mr. THOMAS BOND.

**Assistant Surgeons.**
Mr. T. COOKE. Mr. C. STONHAM. Mr. W. SPENCER.

**Obstetric Physician.**—Dr. POTTER.

**Assistant Obstetric Physician.**—Dr. W. C. GRIGG.

**Physician to the Skin Department.**
Dr. COLCOTT FOX.

**Aural Surgeon.**
Mr. JAMES BLACK.

**Dental Surgeons.**
Dr. WALKER and Mr. MORTON SMALE.

**Surgeon in Charge of the Ophthalmic Department.**
Mr. COWELL.

**Surgeon in Charge of the Orthopædic Department.**
Mr. RICHARD DAVY.

**Physician in Charge of the Throat Department.**
Dr. DE HAVILLAND HALL.

**Administrator of Anæsthetics.**—Dr. BOURNS.

**Pathologist.**—Dr. HEBB.

**Medical Registrar.**—Dr. WILLS.

**Surgical Registrar.**—Mr. A. E. TAYLOR.

**Curator.**—Mr. C. HEBBERT.

## RESIDENT OFFICERS.

**House Physicians.**—Mr. HUNT and Mr. TAYLOR.

**House Surgeons.**—Mr. HAGUE and Mr. POWELL.

**Resident Obstetric Assistant.**—Mr. BETTS.

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# WESTMINSTER HOSPITAL MEDICAL SCHOOL.

## LECTURERS.

Clinical Medicine.—Dr. STURGES, Dr. ALLCHIN, Dr. DONKIN.

Clinical Surgery.—Mr. COWELL, Mr. RICHARD DAVY, Mr. MACNAMARA.

Medicine.—Dr. STURGES, Dr. ALLCHIN, F.R.S.E.

Surgery.—Mr. COWELL, Mr. MACNAMARA.

Practical Surgery.—Mr. DAVY, Mr. STONHAM, Mr. SPENCER.

Anatomy.—Mr. BLACK.

Practical Anatomy.—Mr. C. HEBBERT.

Physiology, Practical Physiology, and Histology.—Dr. P. S. ABRAHAM.

Chemistry and Practical Chemistry.
Dr. DUPRÉ, F.R.S., Dr. H. WILSON HAKE, F.C.S.

Midwifery and Diseases of Women.—Dr. POTTER.

General Pathology.—Dr. ALLCHIN.

Morbid Histology.—Dr. HAKE.

Materia Medica and Therapeutics.—Dr. MURRELL.

Forensic Medicine and Hygiene.—Dr. HALL.

Toxicology.—Dr. DUPRÉ, F.R.S.

Insanity.—Dr. CHARLES MERCIER.

Ophthalmic Surgery.—Mr. COWELL.

Orthopædic Surgery.—Mr. RICHARD DAVY, F.R.S.E.

Diseases of the Skin.—Dr. COLCOTT FOX.

Aural Surgery.—Mr. BLACK.

Dental Surgery.—Dr. WALKER.

Laryngoscopy.—Dr. DE HAVILLAND HALL.

Comparative Anatomy.—Dr. ABRAHAM.

Neurology and Alienism.—Dr. MERCIER.

Experimental Physics.—Dr. GEORGE OGILVIE.

Anæsthetics.—Dr. BOURNS.

Botany.—Mr. WORSLEY-BENISON, F.L.S.

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Treasurer of the School.—Mr. COWELL.

Dean of the School.—Dr. DONKIN.

Secretary and Librarian.—Mr. GREEN.

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